An Illustrated Review of Municipal Improvements and Civic Advance

The American City

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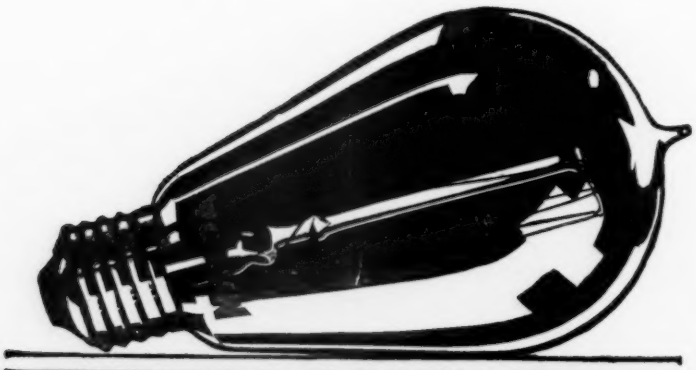

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Two editions of THE AMERICAN CITY are published each month, both containing the same number of pages. The distinction in contents is indicated above. The subscription price of either edition is $3.00. For $1.00 additional per annum, any subscriber may receive both editions; or any subscriber may have his name transferred from the mailing list of the City Edition to that of the Town and County Edition, or vice versa, without extra charge. Canadian subscribers pay 50c extra per year to cover postage; other foreign countries $1 per year extra

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VOLUME XVII
NUMBER 4

The American City

NEW YORK
OCTOBER,
1917

Dollars in City Dumps

The Making of Money and Men Thru the Chicago Salvage System

By H. L. Baldensperger
National Committee on Prisons and Prison Labor

OUR correctional institutions are the product of a society that maintains city dumps. It requires time and money to deal adequately with the waste of the community. We cannot give the time. We throw our waste matter aside; we dump our waste man into an institution where he lies undeveloped. Most of our municipal and county workhouses are workhouses in name only. Idleness reigns supreme, or, if the inmate is employed, he is usually exploited for the benefit of the few.

The Chicago House of Correction is an exception to the rule. This institution has found the real value of the waste man and the waste commodity. The superintendent, by employing the outcasts of society on the conservation of the waste of the city, has revealed new sources of revenue. After one year of operation he made a return to the city equal to 50 per cent of the maintenance cost of the institution. The amount received by the city was 900 per cent more than the sum derived from the sale of the city waste under the public sales method.

The physically incapacitated, the mentally unfit, the flotsam and jetsam of society, make a return to the institution and the community far greater than that made by the physically fit under the previous methods of employment! Unskilled, without adequate tools or buildings, the waste man makes a daily return four times the cost of his maintenance.

Why is it done? How is it done?

The Problem of Employment for Prisoners

In 1914, the contract system of employment for prisoners was abolished at the Chicago House of Correction. This vicious system, which exploits the prisoner for the benefit of the contractor, which is responsible for the retention of barbaric punishments and causes the prison to be the center of the political spoils system, had been weighed and found wanting. The investigation of the Board of Efficiency and Economy found that the contract shops were run at a loss to the community.

Two thousand prisoners were left in idleness by this change. The stone crusher, the quarry and the brick yard gave employment to a handful. As the prison is situated in the center of a densely populated region and without sufficient grounds, the prisoners could not be employed at farming. Nor did the newly established bake shop and laundry for supplying the municipal institutions assist materially in reducing the amount of idleness or in increasing the revenue.

The war solved the problem. The unprecedented demand for old metals and cloths, with a constant diminution in supply, was forcing prices higher and higher. The junk dealers were wild with excitement. The fluctuation in quotations made fortunes as rapidly as steel and munitions in Wall Street. The superintendent, John L. Whitman, saw the opportunity. He brought the matter to the attention of the

members of the City Council. They authorized him to buy and sell the waste of the municipal departments, and, in spite of the opposition of those who had profited by the system of cash sales, appropriated $10,000 for the purchase of six motor trucks.

The First Year of the New Project

The project was successful from the first. The financial statement of the first year's operation reads like the prospectus of a wildcat mining project. Articles which had been thrown aside or sold for a pittance made a return of hundreds of per cent. Electric light bulbs, discarded as burned out, proved in excellent condition when tested. The cleaning force of the public institutions, who are accustomed to throw aside bulbs to save washing, are now contributing to the revenue of the institution. Not one bulb has been purchased at the Correction since the installation of the testing station. Hundreds of dollars spent annually for rentals of storage for discarded furniture and equipment were saved. Articles considered worthless were repaired and resold to the departments that had discarded them.

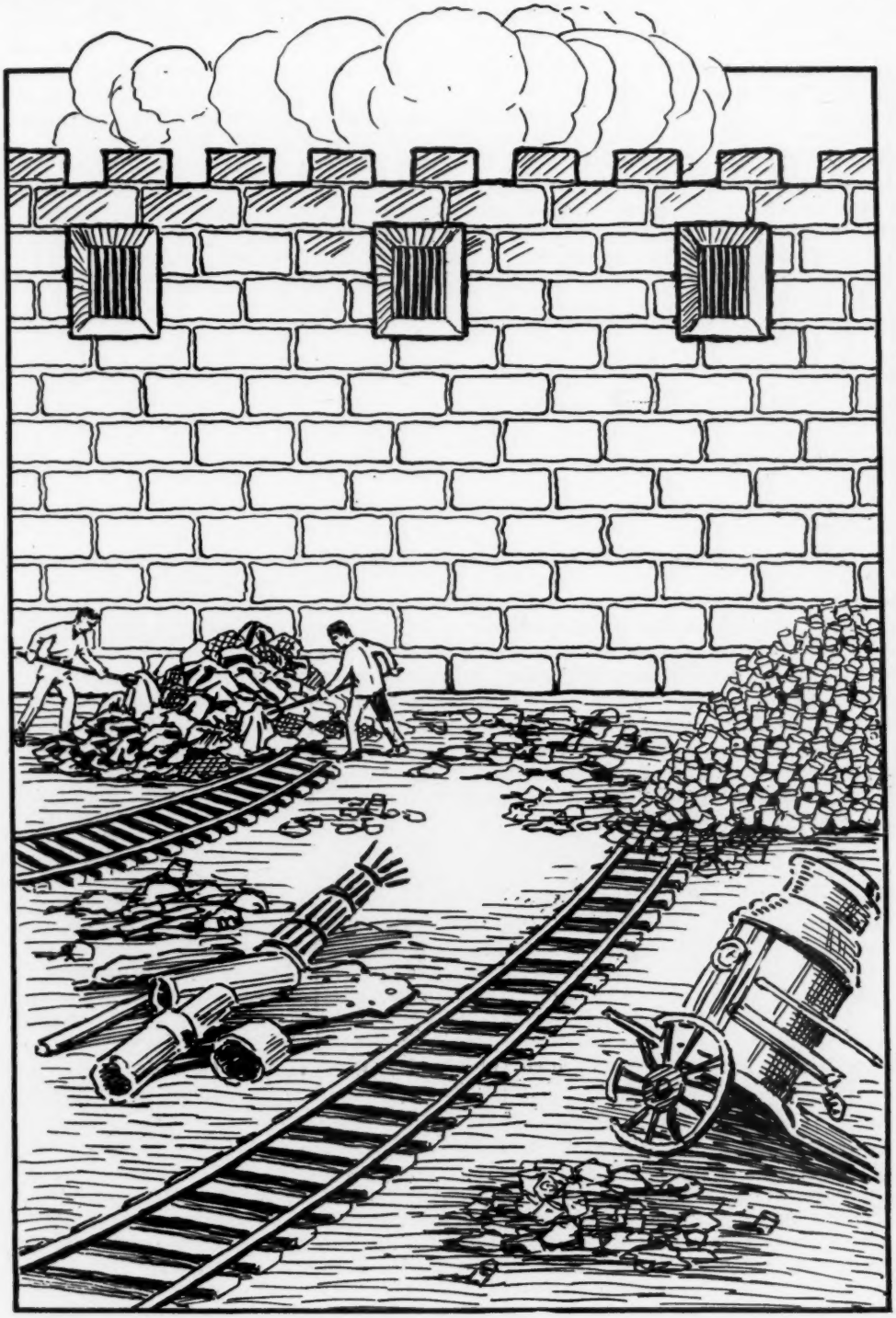
Waste and petty graft were abolished. The sale of waste in bulk, and in many cases without advertising, ceased. The vicious cash sales system which permitted petty grafting was ended. The year prior to the establishment of the salvage work at the Correction the city received $13,000 from the sale of unclassified junk; the following year, with commercial sortings and sales based upon waste exchange quotations, the departments were credited with $86,000, the city treasury received over $10,000 for the labor of the prisoners, and $40,000 was set aside for the relief of prisoners' families.

This showing was made in the face of the prediction that the junk dealers would oppose the scheme and would not purchase the material. Such statements reveal the ignorance which exists concerning this comparatively new industry. The reclamation of waste materials has developed a trade that in amount of capital invested, in workers employed, rivals many an old-fashioned line. With exchanges competing with the cotton and grain pits in amount of gross sales, with trade organizations developing trade ethics, the waste dealers of this country are adding as much to the wealth of this country as many industries which are considered indispensable.

Such a trade would welcome any project looking to the conservation of city waste. Not only did the Chicago dealers welcome the idea; they also gave Superintendent Whitman their hearty support and coöperation. They taught him the various commercial classifications and specifications, they advised him concerning the movement of the market and in some instances gave him a premium on his gradings, which were superior to those on the market. With rising labor costs, the waste dealers saw the true significance of the movement. Cheap hand labor is essential in waste conservation. The Chicago salvage system was not only contributing to the revenue of the city, it was adding to the wealth of the nation.

The Saving of Valuable Materials

Reduction methods now employed destroy many valuable by-products. To attempt to conserve them with free labor at the present market wage is impossible. By employing unskilled labor, maintained at a low per capita cost, the superintendent can afford to use hand labor. As a result, he effects a saving of material impossible in the commercial field. The rubber and lead coverings of conduit wires are destroyed by commercial reduction methods. The copper wire makes the sole return. At the Correction the lead and rubber are cut from the wire by hand, and over $11,000 worth of rubber has been added to the fast-diminishing supply. The burned-out electric lamp is sold in the commercial field for the brass socket and the flint glass; the valuable platinum is rarely conserved. By assigning one incapacitated prisoner to this work, the superintendent added much to the wealth of the nation. A man so mentally unfit that he ought never to be out of restraint became a valuable member of society. Maintained at the cost of 50 cents a day, he conserved $9,000 worth of platinum in less than a year, and this return was made on an investment of less than a dollar for equipment. The glass enclosing the platinum is ground into powder in a druggist's mortar. The powdered glass is mixed with water and poured over a washboard. The glass is carried off with the



Sketch by Staff Artist of The American City.

A CHICAGO PRISON YARD, WHERE RAGS, TIN CANS AND JUNK ARE TURNED TO PROFIT

water; the heavy platinum falls into the ridges. A 50-cent man and a 10-cent washboard made a return equal to the income of several thousand Liberty Bonds!

Bullets in waste paper! The British Government has appealed to the people to save old paper stock; it is remade into cartridge shells. The British Local Councils have sorted and sold paper for two years, thus adding to the military strength of the country and assisting in the maintenance of the local hospitals. Superintendent Whitman, by conserving and sorting the waste paper from the public buildings, is adding to the potential military strength of this country. He is freeing labor for other service. Factories manufacturing old paper into new stock have been crippled for lack of sorters. Despite the latest mechanical short cuts, the labor cost of sorting is rapidly increasing. The Chicago system is doing its bit in more ways than one.

From the garbage pail to the trench is a far cry; but the rags which are thrown out at the reduction plant are now dried and sorted and used in the manufacture of waterproof paper. The British forces have used this material for several years in facing the sides of the trenches. A public menace becomes a public benefit. The festering mass of rags which formerly threatened the health of the community now adds to the revenue of the city and to the comfort of those who are doing their bit in the foreign field.

The slacker has been punished by the Chicago system. The workers in the repair shops of the Department of Education evidently believed that the shops were maintained for their benefit, not for the city. They soldiered over their work, and as a result the Department found it cheaper to discard equipment in need of repair and to purchase new rather than to attempt to repair the old. After three months' trial, the repair shop of the Correction made such a showing that the Department of Education gave up its shop and turned over the work to the prisoners. Shovels thrown aside by the Highway Department are repaired and used in the brick-yard of the institution. The harness hospital repairs harness and resells it to the very department that considered it useless.

Everything is grist at the waste yard. It is an Old Curiosity Shop in prison. The yard is piled high with a collection of nondescript junk. Motor trucks manned with convict crews are constantly adding to the potential wealth, while the shrieking shifting engine hustles out the cars loaded with marketable material.. Electric shears tear old iron into "bushelings," and the iron plunger breaks iron plates into melting sizes. Scattered about the yard are prisoners satisfying the human instinct to see how it is made. Without guards or supervision, the inmates sort and re-sort, cut and break, in order that the waste of the community may again become wealth.

The Making of Men and Money

Superintendent Whitman has succeeded in making men and money for the city. Working with a short-term, unskilled, and in most cases deficient, prisoner, heretofore considered a hopeless proposition by those who profess to know the prison field, he has proved that the man's interest can be aroused and his loyalty secured. Prisoners work outside the walls without guards; they go into remote parts of the city with motor trucks to wreck buildings or to haul in waste material. In attempting to conserve the waste of the city, the superintendent has paid as much attention to the man as he has to the material. The prisoners' relief fund pays the salaries of two social workers who assist the man upon discharge. Mr. Whitman is preventing wastage in human life thru the profits on the waste of the community.

This project will succeed elsewhere. If the superintendents of municipal and county institutions receive the coöperation of the public officials, they can add materially to the revenue of the city and the wealth of the country. If boards of trade and chambers of commerce will investigate the matter, they will find, in many instances, opportunities for the development of this work. This plan offers the civic bodies of this country an opportunity to do their bit. President Wilson recently called upon America "to correct her unpardonable fault of wastefulness and extravagance." The Chicago salvage system offers the opportunity. Will America accept it?

Why not find the dollar in *your* city dump? The National Committee on Prisons and Prison Labor, Broadway and 116th Street, New York, will tell you how.

Paving and Road Building With Special Reference to Ann Arbor's Experience

By Manley Osgood
City Engineer, Ann Arbor, Mich.

THE first pavements constructed in Ann Arbor were laid in 1898 and 1899. Brick on concrete foundations was used with soft filler between the brick. This pavement will be twenty years old next summer and is in fair condition for a pavement of this age, altho somewhat rough on account of unequal settling of the individual brick.

From 1900 to 1903, inclusive, asphalt block laid on nothing but compacted sand and gravel foundation was tried, and 32,500 square yards of this type was laid on some of the heaviest traveled streets in the city. As early as 1908 it was realized that some measure must be adopted to preserve this pavement, and it was given a carpet coating of tar and sand. The tar and sand adheres very well to the asphaltic surface of the block, and carpeting has prolonged the life of this type of pavement many years. On these streets such a coating lasts for about four years. Ann Arbor learned that any necessary patching of a pavement should be done with the same material as that of the pavement to be patched. The repairing of asphalt block streets with vitrified brick or concrete was an absolute failure.

In 1913 one city block of this type of pavement was replaced with standard vitrified brick on concrete construction. In 1916 a second block was replaced, and this year a third block was so treated. These blocks are in down-town districts where the city's heaviest traffic prevails. It is proposed that in districts where the traffic is not so heavy the asphaltic block be used for foundation, to be surfaced with asphaltic concrete or sheet asphalt.

From 1909 to 1914, inclusive, the more or less famous Ann Arbor tarred concrete or "dollarway" pavement was laid exclusively. The first pavement of this type was constructed on Maynard Street; it is one block long and contains 1,880 square yards. The materials were purchased and the work of construction done by the city, and every precaution was used to procure good results. This pavement was laid for $1.03 per square yard, including curbing and grading, or for 78 cents per square yard for the pavement only. It had been quite difficult to obtain the necessary majority signatures for a pavement previous to this time, but when the news spread that this pavement had been constructed so cheaply, petitions commenced pouring in to the Common Council from all parts of the city, and all expressed preference for a pavement similar to that on Maynard Street. The result was that the city started paving streets as fast as possible with the machinery and labor available.

In the next two years, 1910 and 1911, during which 58 per cent of all of this type of pavement now in the city was laid, everything was sacrificed for first cost. The small-batch concrete mixer used on Maynard Street was replaced by continuous mixers of greater capacity. Cement was never tested unless it was evident that it did not come up to the specifications. Bank run gravel was used in both courses without screening or washing, and especially in 1911, when the greatest yardage was laid, there was not enough or sufficiently competent supervision and inspection to insure even the best obtainable bank run gravel. The pavement was reduced from the total thickness of 7 inches to a total thickness of 6 inches, making the lower course 4½ inches thick and the upper course 1½ inches thick. During these two years this type of pavement was promoted thruout the entire country. The low cost was the most advertised feature, and the results obtained in Ann Arbor were used as examples of remarkable savings.

The enthusiasm of the people of Ann Arbor about this type of pavement continued to grow in 1910 and 1911, and then the tide began slowly to turn. It became evident that it was necessary to recarpet the concrete every two or three years—in some cases, varying with traffic conditions,

even every year. Those who owned automobiles did not like the throwing up of the tar and sand on the under side of the fenders. In some places where the carpeting peeled off, the concrete commenced to ravel, and sections, varying in size, had to be cut out and replaced with better material. It was then realized that reducing the first cost to a minimum had caused a heavy burden of maintenance and repair. These pavements must be kept carpeted to preserve the concrete underneath as long as possible.

In 1913 and 1914 the same type of pavement was laid, but greater precautions were taken in the selection of material. During the latter year only washed sand was used in the top course. Results show that the greater care and increased cost were justified. In 1915 the city returned to standard types of pavement. Reinforced concrete, asphaltic concrete on cement concrete foundation, and vitrified brick on concrete foundation have all been laid with very good results.

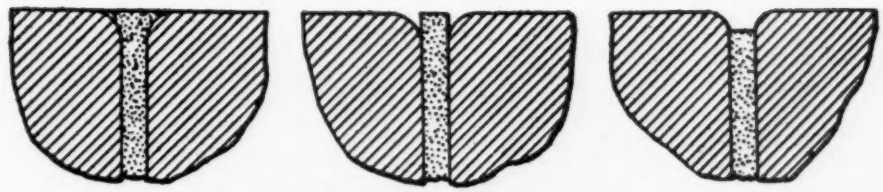
A further change was made in 1915 from municipal to contract work. Inspection of all material and workmanship has been very rigid, except for three blocks of asphaltic concrete surface. On account of the resignation of an inspector before the completion of this street and the inability to find a man to replace him, the last three blocks of asphaltic surfacing were laid with only intermittent inspection. These three blocks have developed surface holes due to insufficient thickness of surfacing in some cases and improper mixture in others, while the remainder of the district, some fourteen blocks, is in excellent condition. The concrete base, as seen thru these holes in the asphaltic surfacing, is in excellent condition and is a very good grade of concrete. The defective surface has been once repaired, and must be again under the condition of a five-year maintenance bond.

Conclusions from the City's Experience

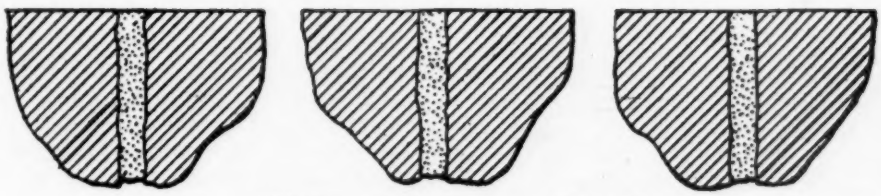
From the foregoing, it may be seen that Ann Arbor has passed thru the same stages of paving development that are experienced in many American cities. These experiences must lead to the following conclusions: that good materials and proper methods, as well as careful workmanship, must be used to make a good pavement of any type and that pavement which is cheap in the first cost is quite apt to be considerably more expensive in the final accounting. Concrete pavements as a class are not condemned by us because of those constructed in 1910 and 1911. We believe that each type of pavement has a place, and it is the business of the municipal engineer to know where each type belongs. The wishes of the property owners should be given consideration, but should not be the deciding factor in the choice of kind of pavement for any particular street or district.

Improvements in Paving

The improvements in the standard types of paving during the last few years have not been very numerous. In concrete paving, better aggregates are being insisted upon, and in some cases richer mixtures. There have also been several improvements in the finishing of concrete pavements, one of the latest being by means of a broad leather belt moved transversely across the crown of the street. In the brick pavements the wire-cut lug brick with square edges was introduced several years ago, but it has only within the last two years become very generally used. The square edges and rough side surfaces of this brick are quite an improvement over the old repressed type. During the last year the monolithic and semi-monolithic types of brick pavement have also been developed, in which, in place of the formerly used sand cushion, the brick are laid either directly upon the green concrete foundation or upon a mortar bed. This type of pavement, for it is really but one type, properly constructed, has the following advantages over the former type, where the concrete base and brick surfacing were separated by the sand cushion: first, it insures that the rolling and grouting of brick will follow closely after the laying; second, it insures a firm and separate bearing for each brick; third, it eliminates the danger of sand floating or being squeezed up into the joints, thus preventing the proper penetration of the grout filler; this does away with many of the transverse cracks and the sections where the brick are not properly bonded, faults which were quite common in the former type of brick paving; fourth, the monolithic construction eliminates the necessity for marginal curb on country roads.

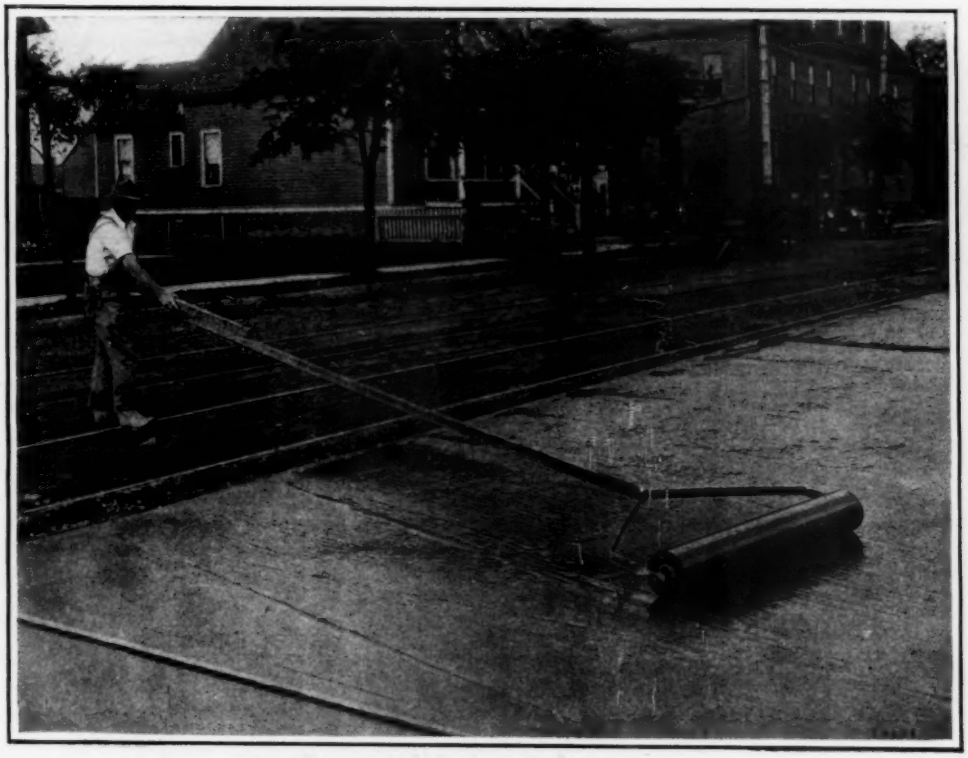


Repressed Brick



Wire-Cut Lug Brick

CONTRASTING SECTIONS OF REPRESSED BRICK AND WIRE-CUT LUG BRICK



FINISHING CONCRETE PAVEMENT WITH ROLLER

New Types of Construction

A method of construction of brick pavement on hillsides, known as the "dual" type, has been developed comparatively recently. A strip 7 or 8 feet wide along each side of the improvement is laid with "hillside" blocks, which give a corrugated effect to aid horse-drawn traffic. The center of the improvement between these two strips is laid with ordinary smooth brick and is intended primarily for automobile traffic. This type of construction separates very effectively the slow and rapid-moving traffic.

In one of our Michigan cities this year is being tried a novel type of construction. A pavement 18 feet wide, in this case of asphalt confined between headers of concrete built as a part of the concrete foundation, is constructed along the center of the street, and the strip along each side between this pavement and the curbs is built of earth or gravel, as are the shoulders of the paved country roadway. It will be watched with interest to see if this type of construction is adapted to the traffic on a city street.

A City's Unpaved Streets

The road building of a municipality, as distinguished from its paving, is largely the preparation and maintenance of unpaved streets. In and about Ann Arbor gravel is plentiful, and road building is, therefore, limited to the spreading of gravel over the surface of the road to be improved, leaving it for traffic to roll down. If the gravel surface wears full of holes, another gravel surface is applied until, in many cases, the roadways have been built, in just this manner, higher than the sidewalks.

The correct method of building and maintaining such streets or roads is much the same whether the surfacing material or "metal" be gravel, broken stone or some other suitable local material. If the street to be improved is not curbed, or if the graveling or improving is not to be carried from curb to curb on the street that is curbed, shoulders should be cut the proper distance apart to provide for surfacing of the width desired. The gravel should be spread evenly between the shoulders, or between the curbs, as the case may be, with all the larger stone or coarser gravel on the bottom and the finer material on top in such manner that it will pack uniformly. The entire road surface from curb to curb or from side ditch to side ditch should then be rolled, commencing at the sides and working toward the center. When holes appear in the gravel surface, they may oftentimes be cared for by cutting square edges about the hole and filling with gravel tamped in, but it is useless to throw small quantities of gravel into these holes without cutting the edges square. When the surfacing becomes sufficiently worn or raveled to require regraveling—which, if the ordinarily traveled street is properly constructed and maintained, will not be for several years—the fine dust should be scraped from the surface, the gravel or "metal" should be scarified and loosened, the necessary amount of fresh gravel or stone spread over the surface, and then the whole rolled until it is thoroly consolidated into an even surface with proper crown and to proper grade or elevations.

The most important part of road-building or road-making—and I speak of roads as distinguished from pavement—is the dragging or floating. Even an earth road, if dragged frequently after each rain until the surface becomes dry enough to prevent rutting, may be kept in very good condition. The department in charge of maintenance of unpaved streets should be provided with a sufficient number of these drags or floats, and they should be used after every softening of the road surface until such surface is again hard enough to prevent rutting. This frequent dragging or floating of the road is the most important measure of maintenance and the one which will give the best and most apparent results for the money expended.

It is admitted that the first cost of preparing the road in the manner above outlined is more than if less care is used, but the results in the length of wear and convenience to traffic will more than justify the additional expenditure.

Planning Sunlight Cities*

By Herbert S. Swan and George W. Tuttle

PART II—Concluding Article Begun in September Issue

Minimum Standards of Sunlight

IN a sunlight plan, minimum standards of sunlight will be established for the interior of rooms and for the curb level of every street and yard as on the shortest day of the year. This standard of sunlight may be fifteen minutes, a half-hour, an hour, or two hours, according to the requirements of the particular locality, but in each case the height of building, whatever it may be, will be regulated with reference to the width of the street and yard space in such a manner as to secure this minimum amount of sunlight.

Either the height of building, or the width of streets and yards, will at any given latitude be made to vary according to orientation in order to meet the requirements of this standard. At Philadelphia, for example, to obtain fifteen minutes of sunlight on either side of a north-and-south street at the curb level, the height of building may be 7.5 times the street width. But to obtain the same amount of sunlight on the north side of an east-and-west street the height of the buildings on the south side may not exceed one-half the street width.

Table III shows the uniform height to which buildings fronting on streets of different orientations may be erected at different latitudes in order to obtain given periods of sunlight at the curb level or at the same distance from the top of the building on the opposite side of the street on the shortest day in the year. This height limit has been calculated by fifteen-minute periods from a quarter of an hour to two hours of sunlight. The maximum height to which buildings may be erected so as to allow a given minimum period of sunlight at the ground on the opposite side of the street is represented as a coefficient or multiple of the street width. To ascertain the height limit permitting the desired amount of sunlight, it is, therefore, only necessary to multiply the street width by the coefficient in the table. To ascertain the street width required to furnish a building of a given height a minimum quantity of sunlight at the curb level, it is only necessary to divide the height of the building by the appropriate coefficient for the period of sunlight required, as given in Table III. The quotient will be the allowable width of street. The height of building in this table is in each case given to the nearest tenth of the street width. This fact explains apparent discrepancies between Table I and Table III.

Arrangement of Buildings

In the winter season no sunlight can, of course, be obtained on the south side of an east-and-west street. No adjustment in the height of buildings or in the street width can sun-light rooms having a northerly exposure. The remedy in such a case would be to require the rooms to have windows exposed toward one of the other three points of the compass. This can readily be done in detached houses, but it is very difficult in attached houses. This condition suggests the advisability of reserving east-and-west streets for detached houses. North-and-south streets, on the other hand, may be developed with either attached or detached houses.

Buildings should generally be arranged in such a manner that the narrow dimension is oriented east and west and the long dimension north and south, so that the greater length may receive sunlight on both faces.

Compliance with these principles would favor streets of a north-and-south orientation for attached houses. In the case of detached houses the orientation of the street is not so important, an east-and-west street in some respects being superior to a north-and-south street. For a private-house district an east-and-west street has this decided advantage—the narrow dimension of the lot may front the street; on a north-and-south street the length of the lot would have to front the street. The requisite sunlight for detached houses of a villa type can, in other words, be purchased more cheaply on an east-and-west street than on a north-and-south street.

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TABLE III. MAXIMUM HEIGHT LIMITS FOR DIFFERENT PERIODS OF SUNSHINE.

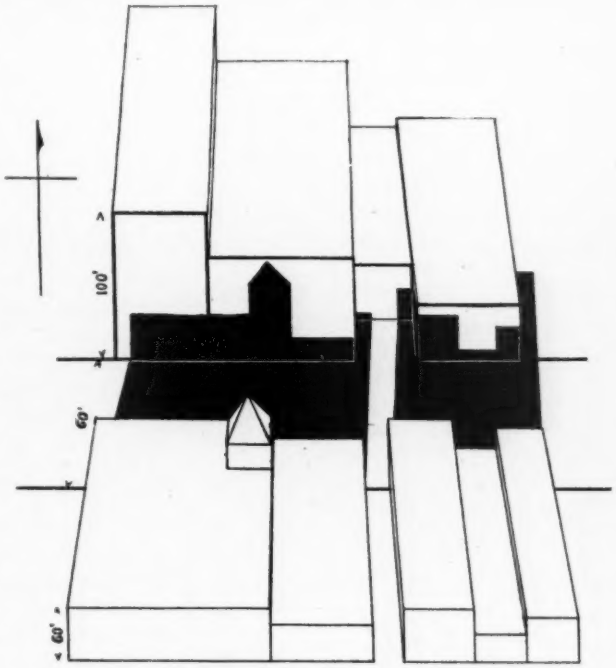
(The figures in the table give the approximate height of building allowable on the side of the street indicated at the top of the column to permit the stipulated amount of sunshine at the curb level on the opposite side of the street. Winter solstice.)

Minutes of Sunshine	Orientation of Street. South.		—15° W.—		—30° W.—		—45° W.—		—60° W.—		—75° W.—		—West.—	
	Side of Street w. s.	e. s.	w. s.	e. s.	w. s.	e. s.	n. s.	s. s.	n. s.	s. s.	n. s.	s. s.	n. s.	s. s.
	Height of Building in Terms of Street Width													
	25° North Latitude.													
15	11.1	11.1	10.1	11.8	9.8	12.5	9.3	10.3	4.3	8.4	..	1.0	..	.9
30	5.5	5.5	5.3	5.6	5.0	5.9	4.2	5.6	0.3	3.5	..	1.0	..	.9
45	3.6	3.6	3.4	3.8	3.0	4.4	2.5	3.9	..	2.8	..	1.0	..	.9
60	2.7	2.7	2.6	2.8	2.1	3.1	1.6	3.1	..	2.4	..	1.0	..	.9
75	2.1	2.1	1.9	2.3	1.6	2.5	1.1	2.6	..	2.1	..	1.0	..	.9
90	1.7	1.7	1.5	1.9	1.2	2.1	.7	2.2	..	1.9	..	1.0	..	.9
105	1.4	1.4	1.3	1.6	1.0	1.8	.4	2.0	..	1.8	..	1.0	..	.9
120	1.3	1.3	1.0	1.4	.7	1.6	.2	1.8	..	1.7	..	1.0	..	.9
	30° North Latitude.													
15	9.9	9.9	9.7	10.3	9.1	10.9	7.5	8.6	.4	3.1	..	.8	..	.7
30	5.2	5.2	4.8	5.2	4.2	5.3	3.2	4.5	..	2.2	..	.8	..	.7
45	3.2	3.2	3.1	3.5	2.6	3.6	1.8	3.3	..	1.9	..	.8	..	.7
60	2.4	2.4	2.2	2.6	1.8	2.7	1.1	2.6	..	1.7	..	.8	..	.7
75	1.9	1.9	1.8	2.1	1.4	2.2	.7	2.1	..	1.6	..	.8	..	.7
90	1.5	1.5	1.4	1.7	1.0	1.8	.4	1.9	..	1.5	..	.8	..	.7
105	1.3	1.3	1.1	1.4	.8	1.6	.1	1.6	..	1.4	..	.8	..	.7
120	1.1	1.1	.9	1.2	.6	1.4	..	1.5	..	1.3	..	.8	..	.7
	35° North Latitude.													
15	8.7	8.7	8.2	8.7	7.6	8.4	4.9	6.6	..	1.8	..	.7	..	.6
30	4.3	4.3	4.1	4.4	3.7	3.8	2.0	3.6	..	1.4	..	.7	..	.6
45	2.8	2.8	2.6	3.0	2.2	2.7	1.1	2.6	..	1.3	..	.7	..	.6
60	2.1	2.1	1.9	2.2	1.5	2.2	.6	2.1	..	1.2	..	.7	..	.6
75	1.6	1.6	1.4	1.8	1.1	1.9	.3	1.8	..	1.1	..	.7	..	.6
90	1.3	1.3	1.1	1.5	.8	1.6	.1	1.6	..	1.1	..	.7	..	.6
105	1.1	1.1	.9	1.3	.5	1.4	..	1.4	..	1.1	..	.7	..	.6
120	.9	.9	.7	1.1	.4	1.2	..	1.2	..	1.0	..	.6	..	.6
	40° North Latitude.													
15	7.5	7.5	7.2	7.6	5.7	7.1	3.2	5.0	..	.8	..	.5	..	.5
30	3.7	3.7	3.6	3.7	2.7	3.7	1.3	2.7	..	.8	..	.5	..	.5
45	2.4	2.4	2.3	2.5	1.6	2.5	.6	2.0	..	.8	..	.5	..	.5
60	1.8	1.8	1.8	1.9	1.1	1.9	.3	1.6	..	.8	..	.5	..	.5
75	1.4	1.4	1.2	1.5	.8	1.6	..	1.4	..	.8	..	.5	..	.5
90	1.1	1.1	.9	1.3	.5	1.3	..	1.2	..	.8	..	.5	..	.5
105	.9	.9	.7	1.1	.4	1.2	..	1.1	..	.8	..	.5	..	.5
120	.8	.8	.6	.9	.2	1.0	..	1.0	..	.7	..	.5	..	.5
	45° North Latitude.													
15	6.1	6.1	5.6	6.0	4.4	5.1	2.1	3.2	..	.6	..	.4	..	.4
30	3.0	3.0	2.7	3.1	2.0	2.8	.7	1.6	..	.6	..	.4	..	.4
45	2.0	2.0	1.7	2.1	1.2	2.0	..	1.5	..	.6	..	.4	..	.4
60	1.3	1.3	1.2	1.6	.8	1.5	..	1.2	..	.6	..	.4	..	.4
75	1.1	1.1	.9	1.2	.5	1.3	..	1.0	..	.5	..	.4	..	.4
90	.9	.9	.7	1.0	.3	1.1	..	.9	..	.5	..	.4	..	.4
105	.7	.7	.5	.8	.2	.9	..	.9	..	.5	..	.4	..	.4
120	.6	.6	.4	.7	.1	.8	..	.8	..	.5	..	.4	..	.4
	50° North Latitude.													
15	4.7	4.7	4.0	4.3	4.0	3.9	.8	1.9	..	.4	..	.3	..	.3
30	2.3	2.3	2.0	2.3	1.7	2.0	.1	1.2	..	.4	..	.3	..	.3
45	1.5	1.5	1.3	1.6	.7	1.4	..	1.0	..	.4	..	.3	..	.3
60	1.1	1.1	.9	1.2	.4	1.3	..	.8	..	.4	..	.3	..	.3
75	.9	.9	.6	1.0	.2	1.0	..	.7	..	.4	..	.3	..	.3
90	.7	.7	.4	.8	.1	.8	..	.7	..	.4	..	.3	..	.3
105	.5	.5	.3	.7	..	.7	..	.6	..	.4	..	.3	..	.3
120	.4	.4	.2	.6	..	.6	..	.6	..	.4	..	.3	..	.3

The undesirability of fronting attached buildings on east-and-west streets can scarcely be over-emphasized. The south side of such streets receives no sunlight whatever during the winter and very little during the summer. On the north side of the street no sunlight is obtained at the curb level except near the ends of the block, where the elevation of the building on the opposite side of the street exceeds the altitude of the sun at noon at that latitude. In other words, where the height is half the width of the street, the pavement on the north side of an east-and-west street at the winter solstice will be in shadow north of 39° 59′ north latitude; where the height is once the street width, north of 21° 33′ north latitude; one and one-half times, north of 10° 14′ north latitude; two times, north of 3° 7′ north latitude; two and one-half times, north of 1° 39′ south latitude; three times, north of 5° south latitude; four times, north of 9° 21′ south latitude; five times, north of 12° 9′ south latitude, and six times, north of 13° 59′ south latitude.

Attached houses should, as a general rule, front on streets oriented north and south. This arrangement not only provides them with the maximum amount of sunlight, but it also secures the most intensive utilization

of the land. Such buildings situated on streets oriented at an angle east or west of south, assuming a uniform height limit on both sides of the street, obtain a very uneven amount of sunlight, one side enjoying a superabundance at the expense of the other. No matter what the latitude, the height of building, or the street orientation, one side always receives less sunlight than would be the case on a north-and-south street. With buildings of an excessive height, and particularly at high latitudes, this would not only be true of one side, but of both sides.



SUNSHINE AND SHADOW ON FACADE OF EAST-AND-WEST STREET, WINTER SOLSTICE, 40° NORTH LATITUDE, 11.30 A. M.

To limit the height of buildings differently on the two sides of the street in proportion to the sunlight coefficient of each side would result in entirely different types of development on the two opposite sides of the street. To apply the sunlight coefficient, on the other hand, to the street width so that buildings of the same height could be erected on either side of the street and each side enjoy its minimum standard of sunlight would have the result in many instances of giving the street an absurd width. Either of these expedients is obviously not so satisfactory as a north-and-south orientation of streets with a uniform building height on both sides of the street.

There must be economy in the utilization of land as well as in sunlight. Where there is a conflict between the two there is little doubt as to the side the owner of land ripe for urban development will champion. Fortunately, in this case the interests of the owners harmonize with those of sunlight planning. A north-and-south orientation of streets for this type of building not only results in the fullest utilization of land, but it also secures the best distribution of sunlight. Blocks improved with houses in rows or with apartment houses, then, should have their length parallel to north-and-south streets and their breadth parallel to east-and-west streets. In such developments the distance separating east-and-west streets is of no particular consequence to the sunlight of apartments. The location of such streets in these sections of the city may, therefore, be left entirely to considerations affecting the convenience of traffic. Blocks the length of which parallels east-and-west streets should be re-subdivided into lots fronting on minor north-and-south streets laid out across the narrow dimension of the block before they are improved with attached houses.

The amount of sunlight obtained on east-and-west streets in private-house districts may be effectively increased by staggering the buildings in such a manner that no house is directly back of one in front on the same block.

Arrangement of Windows

All windows oriented in a certain manner, obviously, do not receive sunshine for the same time. Even tho there be no buildings on the opposite side of the street, a considerable per cent of the sunshine received by the façade will usually be cut off from entering buildings by the thickness of the wall in which the windows are set.

Barring obstructions, it is the size of a

window with reference to the thickness of its enclosing wall which limits the period of sunshine admitted to a room. A small window in a thick wall admits sunshine for a time proportionately less than a large window in a thick wall. For an unobstructed window of a given size, the sunshine period diminishes with the thickness of the wall; for a given thickness of wall, it increases with the height and width of the window.

The sunshine period cut off by walls of a given thickness at a window opening, as shown by Table I, is very much greater in a northern than in a southern city.

The volume of sunshine received in rooms is of just as much importance as the sunshine period. A room, for instance, may enjoy direct sunshine for a considerable period and yet have a comparatively small portion of its cubic contents acted upon by direct rays from the sun.

The volume of direct sunshine entering a window decreases far more rapidly with increased height of buildings than does the sunshine period, and this difference increases with added height of buildings. Where opposite buildings obstructing the window are low, the ratio of the sunshine volume to the sunshine period is nearly as great for a thick wall as for a thin wall. But this ratio is considerably reduced in the case of high opposite buildings.

Windows opening to the south admit at some latitudes the entire sunshine period enjoyed by the building façade, provided the walls are not too thick. But this is an exceptional condition. The general rule is that the walls in which windows are set shut out sunshine for a less time on north-and-south streets than is the case on streets of any other orientation.

Various expedients may be tried to increase the sunshine volume entering rooms. By a beveling of the window opening, a window set in a thick wall can, within limits, be made to admit as much sunshine as one set in a thinner wall. The position of windows within rooms is also of importance. Thus a window the top of which is situated near the ceiling permits a deeper penetration of the sun rays into a room than one the top of which is placed some distance below the ceiling. The sunshine volume in rooms with windows opening to either the east or the west may be considerably increased by having the windows located as near as possible to the south wall of the room. Windows opening to the south should be placed as near the middle of the front wall of the room as practicable.

Front and Rear Building Lines

Every attached house should preferably not only front on a north-and-south street, but should also back on a rear yard running parallel to such a street. This yard should be open at either end so that each building backing on it may derive full benefit of the sunlight purchased by its vacant space. Uniform building lines are highly desirable both in front and in rear. They not only conserve the supply of sunlight, but they also economize space. Buildings "pocketed" at either end between deeper buildings receive much less sunlight than those conforming to a common building line, unless they are equipped with a side yard of sufficient width on the south to insure their own sunlight. The provision of such a side yard is usually so expensive a proceeding that it can be afforded only in private home districts.

Inner and Outer Courts

Deep buildings in solid blocks are quite generally a misfit in a sunlight plan. They necessitate inner and outer courts and open spaces, the economic use of which does not ordinarily conform to the height standards of sunlight. Inner courts should not be used at all; outer courts, except those opening to the south, should be used very sparingly. The justifiable use of outer courts depends almost entirely upon the direction of their open end. Outer courts opening either to the east or to the west are subject to the same criticism as east-and-west streets—one side receives no sunlight at all on the shortest day in the year. Outer courts opening to the north are still worse; unless they are extremely long, only a triangular segment of either side wall near the top of the building receives any sunlight. These objections, however, do not apply to an outer court opening to the south, either side of which possesses the advantages enjoyed by buildings on north-and-south streets, while the end, if the court is not too long, has many of the advantages of a building on the north side of an east-and-

west street. An inner court possesses none of the advantages of an outer court open to the south, while it has all the disadvantages of courts open toward the east, west and north in an exaggerated way. Buildings on the south side of east-and-west streets should have their outer courts opening into the rear yard, those on the north side into the street.*

The type of building which most readily avoids the use of courts is one facing on a north-and-south street not more than two rooms deep measured from east to west, every room deriving its sunlight directly either from the street or the rear yard in the case of attached houses or from the side yards in addition to the southerly exposure in the case of detached houses. Such buildings enjoy the maximum possible sunlight.

The Lot Unit

The size of the lot unit is, of course, always conditioned by the character of the building and the amount of space demanded for lawns, gardens and accessory buildings. For sunlight purposes it should also be conditioned by its latitude and its orientation. The minimum practicable depth of workmen's dwellings of low cost and built in rows is probably about 25 feet. How deep at different latitudes would the lot unit have to be for such buildings oriented on north-and-south streets with a yard in the rear, to obtain at least two hours' sunlight on either side at the street and yard level, assuming the height to be 25 feet and ignoring any demand for extra space on account of gardens and accessory buildings?

The width of the yard on each lot provided in the rear of the houses at each of these latitudes respectively would be equal to half the street width in front. Utilizing our sunlight coefficients in Table III, we find the required street width at each latitude to be as follows: 19.2 feet at 25° latitude, 23.4 feet at 30° latitude, 27.2 feet at 35° latitude, 32.4 feet at 40° latitude, 41 feet at 45° latitude, and 64.1 feet at 50° latitude. The minimum depth allowable for the lot unit under these limitations would be 34.6 feet at 25° latitude, 36.7 feet at 30° latitude, 38.6 feet at 35° latitude, 41.2 feet at 40° latitude, 45.5 feet at 45° latitude, and 57.1 feet at 50° latitude.

The depth of lot and width of streets required for any type of development with a minimum sunlight standard can easily be ascertained by using the proper sunlight coefficient. A sunlight plan does not concern itself with the width of lots except where side yards are utilized to obtain sunlight. The width of such yards and the height of the adjacent buildings must, of course, stand in the same relation as their sunlight coefficients.

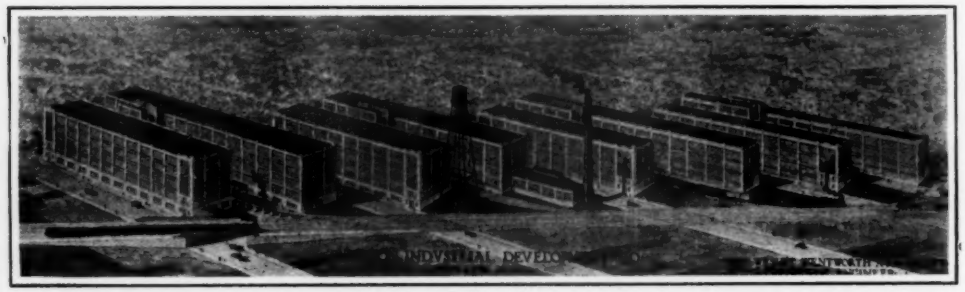
Setbacks and Cornices

Setbacks to maintain the minimum standard of sunlight at the curb level must be in the same ratio as their sunlight coefficients. If not, they are to be considered as an increased height of building, the amount of such increase depending upon the setback angle. Cornices usually diminish the effective street width by at least as much as, and often by considerably more than, the amount of their projection, when the height of building is measured to the cornice.

Conclusions

Good housing means sunshine, daylight, air, ventilation. These are the avowed objects of all building codes. The height of buildings has been restricted, the percentage of lot that may be covered by buildings limited, and the size of courts and yards rigidly regulated—all with the hope that the aggregate amount of sunshine, daylight, air and ventilation in the community might be increased. This hope has, of course, in a measure been realized; for some control is better than no control, even tho that control may be based upon a very imperfect appreciation of the means necessary for the achievement of these ends. But what is needed for the promotion of good housing to-day quite as much as restrictive regulations is the definition of scientific standards which will directly relate height and area provisions to the minimum requirements of public health. Without the establishment of such standards, we cannot be sure that our building codes encourage the right kind of development.

* The writers have worked out two complete sets of tables, one showing the exact period of sunshine and the other the daylight illumination enjoyed by inner and outer courts under all kinds of general conditions.



The Development of the Industrial Section

By A. Pearson Hoover

Consulting Engineer, New York

SUCCESSFUL competition, after the war, with those countries which will then strive to regain lost commerce, will rest upon the conservation of human efficiency, now and then. Those countries which have been engaged in the world's conflict understand thoroly the phrase "Industrial Preparedness." They thoroly grasp its broad application and appreciate to the fullest extent the absolute necessity of industrial economy and efficiency.

This conflict has brought home in a striking manner the need of the conservation of man power. This conservation involves a study and a careful analysis of the whole industrial district of every community. It cannot be confined to one or more isolated plants, but the analysis and planning must be done for the collective whole. To develop comprehensive industrial efficiency means the application to a whole manufacturing district of the basic principles of scientific management. One of the great lessons taught by the present war is the absolute necessity of building organizations on economical and efficient lines. It has brought out clearly the need of careful study and analysis of organizations as a whole, and has disclosed the disaster that results from the neglect of having every department thoroly systematized.

It is true that individual concerns within an industrial section are more or less independent of other firms, but the successful social operation of the manufacturing district depends upon the coöperation of all concerned. A careful survey and analysis of industrial districts, with a view to their development along scientific lines, toward the development of the utmost commercial resources during the war and so that the country may compete successfully with European countries after the cessation of hostilities, should be made by every community as an absolute requirement for present and future growth and prosperity.

A survey of an industrial district does not mean, nor contemplate, the expenditure of vast sums of money on a more or less visionary scheme. Quite the contrary; its object is to stabilize values and conditions and increase production, the returns from which will benefit the municipalities by increased revenues to owners and possibly by increased taxes to the community.

Real Estate Values

There is a certain limiting line that appears to define the industrial section in every community. Between this district and the residential or commercial section, usually appears an area that is of such a character, because of nondescript occupancy, as not to allow of any specific designation. This transition area between the two sections has extremely low real estate values.

In an industrial zone real estate values are determined to a great extent by the location of the properties with relation to transportation facilities. As distance increases from transportation facilities, land values decrease to a certain extent. Real estate values also depend upon the availability of the plots as to size. Property in large areas is more valuable than land in small parcels. Growing manufacturers require more land for development than is necessary in any other zone. Thus, industrial firms must not

only have property for their immediate use, but must be able to procure, if necessary, additional land for future development.

In almost every recognized industrial section, development by a manufacturing firm is arrested by the establishment within the area of small firms who thus cut the available property into small pieces. As a general rule, these firms do not need either land for future growth or frequent transportation service. Their location was in all probability one of chance, not of choice. It is possible, and in nearly every case highly probable, that their location in some other place would answer their needs equally as well.

Certain sections within the industrial district should be restricted to occupancy by manufacturing firms requiring certain large areas of land. These sections should be reserved both as to size of lot and as to service requirements. The rest of the industrial district should also be restricted thru a graduated scale, taking into consideration location, lot area and service requirements.

Such an adjustment would have one great effect—to stabilize real estate values within the entire industrial section by getting the full value represented by each location. It can be done thru the careful planning and study of the relative advantages offered. The industrial district can be so developed that no great decrease in land values will result, but instead there will be a gradual decrease dependent upon relative location.

If so readjusted, the industrial section would be built and operated upon a truly economical and scientific basis, giving to each occupant the service he requires. The full resources of the manufacturing zone would then be utilized and the future cared for by a well-organized plan of development.

Transportation Facilities

One of the primary requisites for the proper development of an industrial section is ample provision for shipping facilities. That facilities for the receiving and shipping of goods should be adequate for all industrial firms located within the district, is essential to the development of the individual, as well as the whole manufacturing section. If the whole is to have efficient and economical operation, each unit must require and receive the full service that the location can offer. This is efficient, economical and scientific production. In almost every industrial district firms are allowed to locate, the demand of which for service does not equal twenty-five per cent of the facilities that can be offered. On account of the nature of their finished product or the small yearly tonnage, these firms do not receive the full advantage that can be offered in regard to shipments. They do not require it, do not receive it, and consequently reduce the total efficiency accordingly.

Industries requiring practically no heavy rail service thus exclude those demanding frequent shipments. Industries which, without entailing any material loss, could utilize team track deliveries, obstruct the use of full car load service sidings to the detriment of heavy shippers.

Thru the lack of a thoro study of future needs, industries with a diversity of requirements are often located along the lines of rail transportation. This development has sometimes continued without any thought of the future congestion that is bound to occur. As soon as such congestion of transportation becomes acute, demands are made on the railroads for better service. The municipality is startled by the conditions then bound to exist and the almost practical impossibility of meeting the demands. It is only then discovered that industries have been allowed to build indiscriminately so as to choke any further development of rail service by additional trackage, without the demolishing of industrial plants to make the necessary room for more sidings or main tracks.

A large manufacturing city of the Middle West is experiencing at the present time the situation described above. It is experiencing this disastrous condition from having allowed in the past the indiscriminate construction of industries in any location. Firms are moving to other localities to secure better transportation facilities, realizing that the conditions are such as to make it practically impossible to meet demands for future service.

That this inability to keep pace with transportation demands, thru the lack of a comprehensive study of future possibilities for service, has been the cause of firms moving to other localities not so congested,

is substantiated by the industrial record of certain municipalities in the state of New York from 1900 to 1905. Of a total of 46 municipalities, each having a population of 8,000 and over, 50.7 per cent showed a decrease in the number of industrial establishments reported, while for the state as a whole an increase in the number of manufacturing firms occurred amounting to 3.4 per cent.

The record of a well-known industrial district in Rhode Island for the period from 1900 to 1905 further amplifies the above statement. The industrial district includes a city of over 200,000 population and a surrounding territory of 136 square miles, making a total of slightly more than 154 square miles considered.

WITHIN THE CITY

Year	No. of Establishments	Per Cent Decrease
1900	929	..
1905	881	5.2

OUTSIDE THE CITY

	No. of Establishments	Per Cent Increase
1900	328	..
1905	356	8.5

This condition would never have existed if the manufacturing zone had been looked upon as a large industrial corporation, where success and healthy development depended upon a thoro and comprehensive plan for future growth.

A plan for the future development of the transportation facilities of an industrial district does not mean that the railroads should follow the industries as they expand, but rather that the rail service should be planned in advance, and that restrictions should be exacted of concerns which locate along or near this path of service. In the majority of cases belt lines are built and operated, not from the standpoint of efficiency of joint location of road and industry, but rather from the point of view of picking up business from firms already located. It is a question whether a belt line is the most economical as well as the otherwise best alignment for rail service in a municipality, from the fact that sooner or later it restricts industrial development except on its immediate line of travel. It forms a "band of steel" around the city proper, "choking," as often remarked, everything within its area. Preferably, rail connections should be provided for industrial districts on separate lines, each such line connected to each trunk railroad. In this way each industrial section can be developed as desired and to its fullest efficiency without interfering with the facilities of the district adjacent or nearby.

The solution of the transportation problem in its relation to industrial development requires the service of men qualified to lay out a comprehensive plan for future growth. In this way, and in no other way, will the development industrially of a municipality be possible in an increasing ratio, and so as to realize the full benefits that each location offers.

Fire Hazards

One of the most serious problems confronting any municipality is the question of fire hazards and conflagrations. To be able to combat conflagrations has been the study of experts for years.

Every industrial district should have a clearly defined area sufficient for its reasonable expansion. Adjoining this district should be a residential section. Such section should house the mechanics and laborers finding employment in the adjacent industrial district. Another industrial district should be planned and developed adjacent to this residential section, but at some distance from the first-mentioned industrial zone, and with a limited area as prescribed for the first district. In this way each industrial section would be isolated from each other such district and the possibility of a conflagration spreading thru the entire industrial community would be rendered remote.

To illustrate the result of the haphazard location of industries within an industrial community without restrictions as to areas occupied, some figures compiled from several fire insurance companies doing business in the state of Massachusetts are given. The records of the several companies were selected at random, as far as possible to give a fair average of the ratio of fire loss to amount of insurance written.

RATIO OF FIRE LOSS TO AMOUNT WRITTEN

Year	Amount Written	Fire Loss	Ratio of Loss to Amount Written Per $100
1880-1913 (inc.)	$6,744,506,949	$37,892,464	$0.56
1914	412,197,623	5,150,401	1.25

In comparison with the above figures the

RAILROAD SIDING AT BUSH TERMINAL, FOR PROMPT HANDLING OF FREIGHT DIRECTLY TO AND FROM FACTORY

TYPE OF MODERN INDUSTRIAL PLANT IN BROOKLYN

record of one of the Associated Factory Mutual Fire Insurance Companies will be of interest:

RATIO OF FIRE LOSS TO AMOUNT WRITTEN

Year	Amount Written	Fire Loss	Ratio of Loss to Amount Written Per $100
1850-1875 (inc.)..	$406,284,084	$1,027,536.98	$0.2529
1876-1895 (inc.)..	1,551,259,471	2,809,203.32	0.1810
1896-1916 (inc.)..	5,558,394,375	2,796,474.41	0.0503

The risks written by the several insurance companies given above are for a variety of manufacturing establishments and would compare favorably with the haphazard location of industries in many manufacturing districts. The risks written by one of the Associated Factory Mutual Fire Insurance Companies include both slow burning and concrete constructed plants, but a thoro, systematic investigation is given to each individual plant with reference to its construction and location, before a policy is given. In other words, a risk written by the Associated Factory Mutual Fire Insurance Companies would represent in a general way a restricted and well laid out industrial district.

As shown by these records, the fire loss of the several insurance companies over that of one of the Associated Factory Mutual Fire Insurance Companies is 561 per cent. Could any evidence be adduced that would prove more conclusively the financial advantage, as well as the industrial efficiency, that is to be gained by a municipality thru a study and analysis of its industrial conditions with a view of laying out a comprehensive plan for future development and also promulgating restrictions and suggestions as to present needs?

The confining of industrial sections to certain limited areas would create natural barriers against conflagrations. Study would not have to be made or devices planned to demolish certain sections after a fire had started. Preventives would have been planned for restricting the spread of a fire, not cures invented after the fire had started.

Since the progress and prosperity of an industrial section depend upon the safety of such manufacturing district, several European countries are developing and reorganizing their municipalities along fire prevention lines.

Grade Crossings

The problem of the elimination of grade crossings is, as a general rule, studied after the conditions become so critical as to demand immediate attention. When this stage is reached, conditions which have been created in the past without thought or study for the future, often make the solution of the problem difficult from both the engineering and the financial standpoints. When this condition arises, a full realization of the lack of proper future planning becomes apparent to those directly concerned in the solution. In practically every case the enormous expense entailed to improve existing conditions could have been averted had the municipality in the past looked upon the study and analysis of its future transportation problem as a necessary precedent to prosperity.

The importance of a thoro study of the future needs as to probable grade crossing elimination will be brought out more clearly by a concrete example.

In the Central States, in a town of about 40,000 inhabitants, the question of the elimination of numerous grade crossings has become a serious problem thru its relation to the future industrial development of the municipality. The city had for its chief attraction wonderful natural scenery. This natural attraction was visited daily by scores of people. The railroad entering the city selected that location which would best serve excursionists, altho such location was not the most advantageous from the standpoints of either operating expense or mileage. Within a relatively short period, extensive commercial use was made of natural conditions in and near the city. As a result of such commercialization of the local natural resources, many manufacturing concerns located within the municipality. They naturally chose locations along the line of the railroad. In a short time the growth of the city was such that the section occupied by the railroad became the heart of the community. Because of the influx of the numerous industrial firms the revenue of the railroads had been shifted from a predominant passenger service to a large freight tonnage. The railroad location near or adjacent to natural scenery was no longer important, as freight handling was an important consideration. By permitting the indiscriminate location of industries along the right of way of the

railroad and because of the resulting growth in population, the elimination of grade crossings along the existing alignment was made exceedingly difficult. The natural location of the railroad, from considerations other than passenger revenue, was along a line some distance from its actual location. This section was also the logical place for an industrial development. If appreciation had been felt of the need of a comprehensive plan for future development as soon as the city began to take the form of an industrial community, the relocation of the railroad along the most advantageous line would then have been easily possible with the immediate removal of all the dangerous grade crossings that now occur. The industrial district would also have been in a location where future development would have been made possible in almost any increasing ratio, whereas at the present time its limitation, as far as transportation facilities are concerned, will be reached within a short period. The expense that will now be involved in a new location with the immediate elimination of all grade crossings, readjustments of property and the rebuilding and relocating of certain streets now occupied by the railroad, will be at least five times as much as would have been necessary to relocate the railroad before the conditions prevailing at present had developed.

Comprehensive study and careful planning for the future are essential if any growing city is to save enormous sums in curing civic evils and in securing the full benefit of a large industrial development.

Industrial Terminals

Where conditions permit, the possibilities of an industrial terminal within the industrial section should be given careful consideration wherever it is desired to obtain an economical and efficient manufacturing district. By providing a place to accommodate small firms, the industrial terminal makes possible consolidation of small areas in the industrial district and their utilization by larger firms. Such a terminal also helps toward the solution of grade crossings and is a decided step towards the reduction of fire hazards.

In the industrial terminal it is possible to accommodate, under the most advantageous working conditions, those manufacturers whose financial responsibility does not allow them to obtain for their employes, or themselves, the benefits to be derived from a modern individual industrial plant. The amount of capital required to construct a modern building, suited in every way to their requirements, is, in a majority of cases, needed for use as a working fund to increase their manufactured output. Whenever a small manufacturer owns his plant, the small amount of money available, over and above that required to increase production, is usually spent in the construction of an addition here and there wherever space allows. These additions are of necessity built as cheaply as possible, always just keeping within the building code requirements. Such methods of construction and additions laid out as necessity demands, can have but the following results: low efficiency, unsightly appearance, lowering of adjacent property values and the decreasing of the general health conditions of the employes.

The industrial terminal offers the small manufacturer a building of modern construction, modern equipment and with an efficient layout, wherein he may lease any desired area of floor space, thus being able to increase his production without any additional capital outlay. The advantage of being able to lease additional space under modern conditions as his business increases, without any financial responsibility involved in real estate, is of the utmost importance to a small but growing industrial firm. In the majority of cases, the annual operating expenses in an industrial terminal, with the benefits to be derived from modern manufacturing conditions, are less than the amount carried for relatively the same area in an isolated plant.

In general, an industrial terminal is so designed and constructed as to be able to meet the requirements of almost any line of manufacturing. Concerns are also able to obtain a building meeting practically all their own ideas as to detail, without expense or worry to themselves during construction and operation.

When restricting the industrial zone to the erection of manufacturing buildings of a certain size and kind, small manufacturers who may become large concerns in the future are not barred from the community, for in an industrial terminal a bet-

ter laid out, better fitted and more economical place has been provided in which to start to develop, and a move may be made to an individual site whenever conditions can be satisfactorily met.

The Study and Development of Districts

The study of the industrial development of a community, considering the questions of service, grade crossings, fire hazards, labor matters and limiting areas, can only be solved successfully by a comprehensive and careful analysis of all existing conditions relative to the problem. A corporation does not locate the different departments indiscriminately within its plant. Their location is made after a careful study of the service demanded of each and the service to be obtained from each other. For practically identical reasons a municipality should not allow the haphazard location of old or new departments within the industrial district to the detriment of the section as a whole and the community in general.

Restrictions should be made within the manufacturing zone that would allow the development and improvement of transportation facilities, together with such arrangement of industries as will practically make the demand from each equal to the services offered. Until the full realization of the importance of such planning is recognized, municipalities will be asking the question, "Why don't we develop more than we do?"

That a lack is quite prevalent of appreciation of the need and the possibilities of a scientific development of an industrial section is shown by the decrease in the number of establishments in a great many communities. It is apparent that many methods of improvement which were common in the past will eventually give way to the more practical and scientific method of restricted industrial sections based upon a scientific analysis of existing conditions. It also seems apparent that the need for such a study will be realized to the fullest extent by municipalities, when competition starts after the war.

Those who believe such careful study of existing conditions with the formulation of plans for future development to be visionary are referred to the existing industrial sections of many municipalities abroad, now supplying the needs of the war. Such sections have been reorganized on efficiency lines and look to the conservation of man power.

There has recently developed in England a concentration of commercial forces that is well worthy of serious consideration. This development is what has been termed the Municipal Encouragement of Industries. Such cities as Sheffield, Manchester and Birmingham are working on a scientific and economical plan for the future trade war. Even the "Five Towns of Wales" have combined in the desire to be in a position after the war to compete with Germany in the efficient and economical operation of the pottery industry. In the same way industrial sections are being developed in France and in Germany.

The Federation of British Industries, comprising over forty per cent of the manufacturers in the textile, dye, iron, steel, shipbuilding, engineering, chemical and electrical industries, have mapped out a most comprehensive plan for future development. This plan includes a study of the productive, operative and selling forces looking toward a thoro organization, so as to be in an advantageous condition for competition after the war.

The importance and the seriousness of a careful plan or organization and coöperation in every industrial community along lines of efficiency and economy were voiced by the Hon. John Hedges, English Minister of Labor, while sitting in the House of Commons. He said:

"The problem of how best to combat Germany industrially after the war is one of supreme importance, and it would be well that trade union leaders should give the matter the most intense and careful attention. The policy of 'wait and see what is going to turn up' savors of madness. Old customs and prejudices must be dropped by both sides if victory in the industrial field is to be obtained."

It is only upon such ideas as the vital importance of industrial preparedness, based upon a scientific analysis of all the forces entering into production, that American industrial communities will be able successfully to meet after-war competition.

Civic Work of Educational Institutions

A High School Gives Battle to the Tussock Moth

The Saving of One of the Economic and Esthetic Assets of the City of Rockford, Ill.

By I. J. Mathews

Department of Agriculture, High School, Rockford, Ill.

THE charge has been made that the schools do not enter into the lives of the people as they should. It is significant to note how the Rockford High School has interested itself in the economic and esthetic life of the city.

Stealthily the tussock-moth crept upon the city's shade trees a year ago. This invasion was noted by the head of the High School Science Department, Miss Jennie Waldo. From this source, publicity regarding the menace to the shade trees rapidly spread until the whole city was aroused. The High School took up the work of instruction and destruction, and the publicity propaganda resulted in the following proclamation:

SAVE THE TREES

Silently, like a thief in the night, an enemy has invaded our beautiful shade trees, the pride of the Forest City.

The results will be far reaching. That sheltering tree, which you have planted with your own hands and cared for all these years, which is associated by your friends with your home and family, may be one of the many to suffer from this new pest.

In one of the Eastern cities where the tussock-moth had spread, the citizens failed to take the warnings seriously. In consequence one tree out of every three died the second year after the invasion of the moth.

These trees, while owned individually, are of common interest. Collectively, they reflect the citizenship of our community. Can we afford to lose so valuable an asset? Every thinking citizen should be willing to assist in a movement to stamp out the ever increasing *tussock-moth*.

Are *you* willing to give assistance?

Are you willing that your *children* should be enlisted to *aid in this movement?*

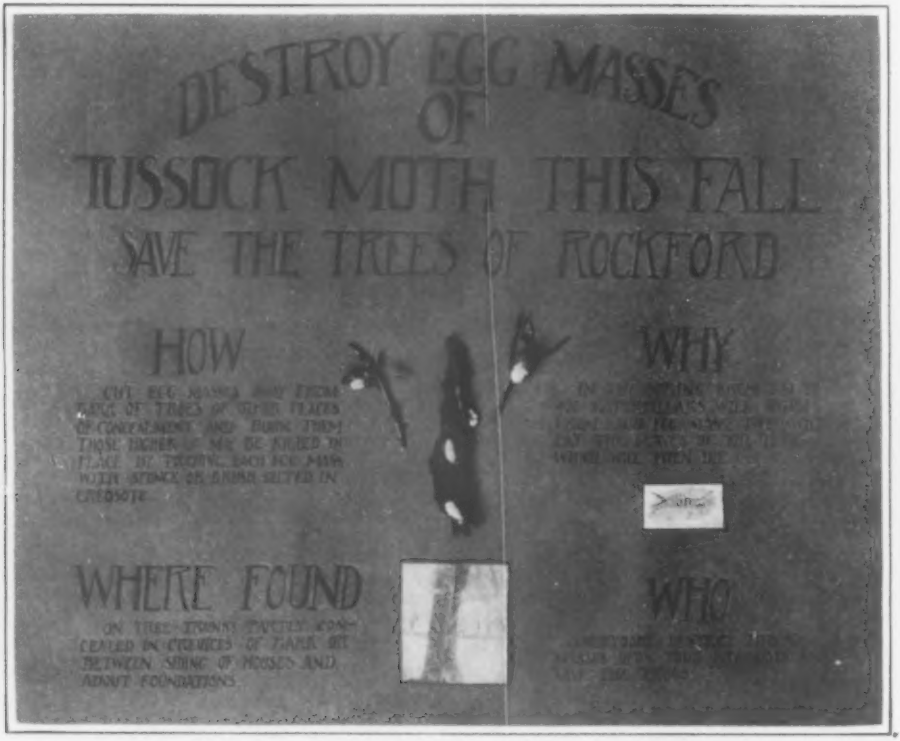
A plan is being worked out that will, it is believed, go a long way toward saving the trees. It will *cost you nothing* except your encouragement and co-operation. *Now* is the time to act, next summer will be *too late*.

W. W. BENNETT,
Mayor.
PAUL B. RIIS,
Supt. Rockford Park District.
R. G. JONES,
Supt. of Schools.
J. T. JOSLYN,
Pres. Rockford Chamber of Commerce.

Saturday, October 28, was set aside as Tussock-Moth Day, and at 9 A. M. the water-works whistle was blown as a signal for completing the destruction of the tussock-moth egg masses.

The greater portion of the work of eradication was done by the High School pupils. The enrollment of the school is approximately 1,500, and there are about 70 teachers. For purposes of school and civic betterment, the student body is divided into groups of 25 pupils each, called "consultation groups." A teacher in the school is assigned to each group, and his function is much the same as that of the "class officer" in colleges. The groups meet once a week with their respective teachers or leaders for consultation on matters of current interest. Thru this contact with the pupils, the teachers become intimately acquainted with them and are able to offer encouragement to those who need it and in many ways to make the school a helpful influence in the community.

The consultation groups undertook the work of destroying the egg masses of the tussock-moth in Rockford. Under the direction of the consultation groups the city was divided into districts, the work in each district being in charge of a particular group, and each student in the group holding himself responsible for destroying the egg masses in certain streets or sections of streets. In summing up, the actual work of each student was found to average one-half hour, including making out his report. The work of the 1,500 pupils represented a total of about 650 hours, or 65 ten-hour days. It is safe to say that it would have taken



ONE OF THE POSTERS MADE BY ROCKFORD HIGH SCHOOL PUPILS AND DISPLAYED PROMINENTLY IN STORE WINDOWS

one man that many days to cover the city, because sections were very badly infested. One young girl told of having taken over 90 of the egg masses from a single house foundation. The school was assisted by the adult population, and a wide observation of the city after the battle had been concluded found very few of the invading hosts of egg masses remaining.

This "Safety First" program has shown the school to be a vital community force, and the threatened destruction of the trees in Rockford has brought out the value of those trees to the city. Rockford has long been known as the "Forest City," because of the great number of its shade trees. In another year the tussock-caterpillars could have taken away the title.

In a work on "The Care of Trees," Bernard E. Fernow, Dean of the Faculty of Forestry of the University of Toronto, gives the following information about the tussock-moth:

"The caterpillar is easily recognized by its coral-red head, with a pair of long black plumes above it and a single one at the other extremity; the small male moth has delicately marked gray or grayish-white wings, while the gray-bodied female is wingless. The cocoon is spun in crevices of the bark; the eggs are deposited on the empty cocoon in a conspicuous white frothy mass, which soon hardens, and in which the wintering takes place. The caterpillars emerge in May, hanging by silken threads when young, spinning their cocoons in early July, the moths flying in July and August. Two or three generations form in a year.

"They feed on maple, basswood, horse-chestnut, buckeye, elm, and a number of other species, and become in some localities a veritable scourge, wandering long distances for food supply.

"Gathering the egg masses not later than the middle of May, or destroying them with creosote oil, which is easily done, is effective. A loose cotton band will prevent the ascent of wandering females and caterpillars. Spraying early in the season and as far as practicable on the under side of the leaves, where the young caterpillars feed, or else later with stronger doses, and shaking the caterpillars from the limbs of younger trees may also be resorted to."

Modern High Schools in Philadelphia

Two of the Six High School Buildings Which Have Been Erected in this City Within the Last Three Years

FRANKFORD HIGH SCHOOL FOR BOYS AND GIRLS, OAKLAND AND HARRISON STREETS
Capacity, 1,800; cost, $720,000

GERMANTOWN HIGH SCHOOL FOR BOYS AND GIRLS, GERMANTOWN AVENUE AND HIGH STREET
Capacity, 2,400; cost, $860,000

Americanizing Our Immigrants

By Gertrude Barchard
Of the Staff of the People's Institute, New York City

EVEN in cities that spent millions on baths, recreation piers, parks and playgrounds, the immigrant, until lately, has remained an outsider. Altho he learned enough of the English language and of the Constitution to take out his naturalization papers, it was the exceptional case when he really "mixed." Not that we considered him insufficiently Americanized. The superficial coating was quite enough for our complacent conscience.

Until the war. Then we saw that conditions in the foreign quarters of our large cities no longer warranted anything like complacency. We could not but notice that passing events left the immigrant indifferent or openly hostile.

This situation has aroused pangs of civic conscience in many cities, and not a few of them have taken steps to remedy the condition. Cleveland and Detroit have each already raised $100,000 for Americanization campaigns. New York City is taking the task in hand thru the Committee on Aliens of the Mayor's Committee on National Defense. All these cities will go after the immigrant in his home and *induce* him to partake of what his community has to offer, and to make the first-hand acquaintance of American institutions.

Realizing the magnitude of the task it has undertaken, the New York committee has called to its assistance the Board of Education and most of the other municipal departments, as well as practically all the important social agencies of the city. The work of the night schools will be broadened, not only thru an increase in the number of their English and civics classes, but by making the schools the domicile of clubs, athletic teams, orchestras, etc., for the students and neighbors. Community centers, churches, settlement houses and other places hospitable to food economy stations, open forums, information bureaus, clubs and classes, are coöperating with all their facilities in the campaign.

The full possibilities of all these factors cannot be realized without the aid of the enlisted—and prepared—volunteer. For the preparation of such workers the Committee called upon the Training School for Community Workers of the People's Institute, New York. This institution will offer the volunteers many of the advantages of its course for whole-time professional students and a number of special opportunities in lecture and field work besides; for the foremost authorities in all lines of community work have agreed to contribute their services as instructors and their field-practice facilities to the equipment of the volunteers. The course has been planned to open early in October with a series of fifteen lectures designed to orient the student in the great problem of immigration. At the same time will begin the field practice work, under the guidance of experts of the city departments and well-known social agencies. After several weeks of practical experience, the volunteer will be expected to choose the special line of work in which he will make his individual contribution toward the cause of Americanization. The range of choice will be large, including vocational guidance, recreation, community health interests, food conservation, and many other activities. When he has made his decision, he will be invited to undertake the more intensive study and practice leading to technical competence in his specialty.

It is evident, therefore, that he who enrolls as a volunteer in the Americanization campaign must have more than a vague desire to help the immigrant. The course of preparation first, and the practical work later, will make serious inroads on his leisure time. On the other hand, in addition to the satisfaction of serving his country, he will receive a valuable training, which may readily be turned to account in this time of enormous growth of the whole community movement.

EDITORIAL NOTE.—Bulletin No. 14 of the Immigration Committee of the Chamber of Commerce of the United States of America (dated August 25, 1917) gives important information on national, state and local governmental activities for Americanization.

FORWARD STEPS
REPORTED TO THE AMERICAN CITY
BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

MAYORS

"If You Have Business with the City This Is Where to Go"

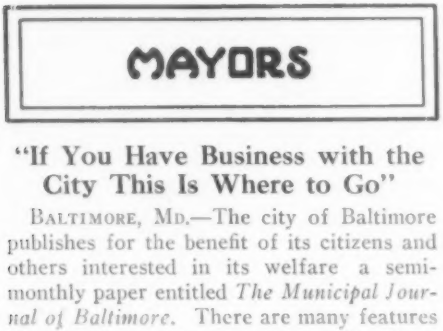
BALTIMORE, MD.—The city of Baltimore publishes for the benefit of its citizens and others interested in its welfare a semi-monthly paper entitled *The Municipal Journal of Baltimore*. There are many features of great interest in its pages, and its circulation of 12,000 is well warranted.

In each issue appear articles by different department heads giving in detail the work of their departments, with illustrations to show effectively the scope of the work. One of the features of a recent issue was an advertisement which had been used in periodicals thruout the country inviting industries to locate in Baltimore. In another issue appeared a live "ad," addressed to the farmers in particular, setting forth the advantages of the new municipal market. A reproduction of this advertisement appears herewith.

A step taken by this publication which is highly commendable from the standpoint both of the city officials and of the citizen is the printing of a complete list of all municipal officials with their addresses, both business and home, and a brief account of the functions of the departments. Not only are the positive functions of the departments listed, but also what might be termed the negative functions. These include activities which the public does not readily locate under the proper authority. The giving of this information is in many cases fully as important to the members of a department as the listing of their positive functions, for answering letters and telephone calls regarding matters which do not concern the department necessarily wastes time.

To increase the effectiveness of the departments and reduce the number of incorrect calls from the public, the *Journal* has published a half-page list entitled, "If You Have Business With the City This is Where to Go." This list includes most of the municipal activities and steers the citizen who has a complaint to the right office instead of permitting his disgust and anger to be increased by chasing around to the wrong offices before he gets a satisfactory explanation of his trouble. The heading of the first column of this list shows the telephone number of the departments to be St. Paul 2000 unless otherwise noted, and then follows the list of matters in which any citizen may have business with the city, together with the corresponding departments. A portion of this list follows:

Alley Cleaning—Department of Street Cleaning; Annex Paving—Annex Improvement Commission; Assessments—Appeal Tax Court; Complaints Relating to Municipal Matters—


New Richmond Market
Finished with white enamel, tile and marble.
MODERN SANITARY STALLS
with mechanical refrigeration; absolutely an even cold, dry temperature, which guarantees the perfect condition of food stuffs.
ENCLOSED BUILDING
No street dust or dirt.
NOMINAL RENT
including electric lights, power, water, refrigeration and cleaning stalls arranged to suit tenants.
FOUR CAR LINES
Howard street to be widened for the parking of automobiles. Advantages offered by no other city market.
Special Inducements to Farmers
Apply to Market Master on Premises, or Comptroller's Office, City Hall

A LIVE "AD" FROM BALTIMORE'S MUNICIPAL PUBLICATION

Bureau of Complaints and Information; Dead Body Found—Coroner and Police Department, St. Paul 28; Deaths—Health Department; Electric and Other Signs—Inspector of Buildings; Franchises—City Comptroller and Board of Estimates; Garbage—Department of Street Cleaning [this is probably one of the best instances of the value of this list, as many citizens report matters relating to garbage to the Health Department, which has control of this refuse in many cities]; House Numbers—Inspector of Buildings; Licenses, Marriage—Court of Common Pleas, Court House, St. Paul 877, Room 12; Licenses, Dogs, Wagons, Theaters, Entertainments—Collector Water Rents and Licenses; Market Stalls—City Comptroller; Plumbing Inspection—Health Department; Sewer Connections—Highways Engineer, Plumbing Division, Health Department; Sewer Connections Loan (how city advances money)—Highways Engineer; Street Cleaning—Street Cleaning Department; Truancy—Juvenile Court, School Board; Water Meters and Payments—Water Rents and Licenses; Weights and Measures—City Comptroller.

CHARLES KREUDER, Jr.,
Mayor's Secretary.

CITY ENGINEERS

A Novel Method of Sewer Cleaning

OWENSBORO, KY.—Various kinds of machines have been devised to clear sewers of such obstructions as silt and gravel. A novel set of specifications drawn up for the construction of our sewers some years ago was the cause of the discovery of a new and very effective method of removing the silt at little expense.

When I drew up the specifications for the sewers, a clause was inserted stating that the test for clearance and freedom from obstructions in the sewer was to be that a ball two inches smaller than the sewer, in diameter, must pass thru without lodging. In testing one portion of the sewer the ball was started on its way but failed to appear at the next manhole until a larger amount of water was applied, when the ball brought out a half brick with it.

DIAGRAM SHOWING TRAVEL OF BALL AND WATER IN CLEANING SEWER

Realizing the value of this, I applied the principle to the cleaning of sewers at times when they failed to give the required flow due to stoppage by silting. Very naturally, this would not be successful when there were roots growing in the sewer, but in the absence of flush tanks, as in Owensboro, the

A PILE OF SILT REMOVED FROM OWENSBORO SEWERS, AND THE ZINC BALLS USED

sewers are very likely to become clogged with silt and other gritty material.

The method of using the balls, which are made of sheet zinc, is as follows: If a sewer is simply flushed out with a stream of water from a fire hose, the silt is forced forward by the rush of the water and the outlet from the sewer becomes choked, causing the water to back up and lose its velocity and effectiveness. If, however, a ball is used ahead of the water it causes a pressure behind it and the sewer is kept open by the increased velocity of the water around the periphery of the ball.

In case a sewer is badly choked, a ball between 5 and 10 inches smaller than the pipe diameter is put into the sewer pipe at a manhole and the fire stream applied behind it until the ball appears at the next manhole. The silt which has come thru both before and after the ball is removed from the manhole and another ball of slightly larger diameter than the first is similarly forced thru. This scheme is continued with increasingly larger balls until the sewer pipe is clean. To insure a perfectly clean sewer the last ball forced thru is 2 inches smaller than the sewer diameter, according to the specifications under which the sewer was accepted. When sewers are not badly silted, and yet it is thought advisable to clean them, larger balls are used at the start, thereby saving time and water.

Many experiments with wooden and zinc balls were carried on when this new method of cleaning our sewers was devised. It was found that wooden balls were of little use, but that the balls must float, rolling along the top of the sewer to be most effective. To secure this, balls of No. 24 gage sheet zinc were made with two thicknesses of the metal and the seams at right angles. The balls used range from 4 to 22 inches in diameter.

In using these balls to clean the sewers it is natural that work is begun at the upper manhole of any lateral and continued down grade. It has been found necessary to place a screen directly in front of the opening into the manhole, with a sand bag behind it in order to catch the grit and prevent it from going down into the next section.

The best example of the effectiveness of this cleaning method was noted when a 15-inch abandoned sewer was cleared of silt which practically filled the inside of the pipe at certain points. The work was begun with a 4-inch ball and continued until a 13-inch ball went thru readily. Five cubic yards of silt were removed in four hours from the sewer, which was 600 feet in length.

This method of cleaning sewers has been the cause of considerable saving to the city where the sewers were located in unimproved streets and where large amounts of sand were carried into the sewer. This has been true even where there were suitable sand boxes and catch basins. The cost of removing silt is not much in excess of removing the sand from the catch basins in the old way. The silt is removed from the sewer by means of a bucket and rope at the manholes. The largest item of cost is the water.

E. B. SHIFLEY,
City Engineer.

FIRE DEPARTMENTS

A Rescue Squad for Special Service

Boston, Mass.—Realizing the need of a squad of men specially prepared for work in dense smoke and chemical fumes, the Boston Fire Department organized Rescue Company No. 1 on June 15, 1917. The new organization is located at the quarters of Ladder Company No. 8 and Engine Company No. 25 at Fort Hill Square, in the very heart of the business and mercantile section of the city.

THE BOSTON RESCUE SQUAD

The rescue company is furnished with an American-La France motor-driven car, carrying six Draeger smoke and gas helmets, pulmotor, elevator rescue outfit, oxygen and acetylene outfit for cutting metal bars in saving lives or salvaging valuable materials, a 60-gallon chemical tank, hose, axes, extinguishers, life line, jimmies and other small tools.

The particular duties of the company are to perform rescue work and to fight fires

in inaccessible places, such as basements, sub-basements and holds of ships, but in addition it performs any other special work to which it is assigned.

In the short time since its organization the company has achieved excellent results along the lines for which it was formed and has been of material assistance to the department in reaching fires in smoke-filled basements. At a recent bowling alley fire in Boston, where the ventilation was extremely poor and the basement was very rapidly filled with thick smoke, the rescue company, by using their smoke helmets, were able to reach the seat of the fire, carrying large lines of hose, and were an important factor in extinguishing it. By this act alone, undoubtedly, thousands of dollars' worth of valuable property were saved from fire. On Sunday, July 8, 1917, a serious fire broke out in the warehouse of the John T. Connor Company, on South Street. The company, equipped with their masks, entered the building and shut off the ammonia supply, and thus made it safe for other members of the department to enter and extinguish the fire.

This company is yet in its infancy, but a few instances of its worth, such as those cited above, prove that its establishment was well warranted from the standpoint of the saving of property and human life.

A similar company is in service in New York City, and before the Boston squad was organized, Lieut. Daniel J. Hurley was sent to New York to spend several days with the older company. He studied its methods and obtained much useful information, as well as gaining a good deal of practical experience. Lieut. Hurley is now in charge of the company, which is made up of men of fine physique and particular aptitude for the work. No man was accepted until he had passed a rigid physical examination. The present members of the company, in addition to the lieutenant, are Arthur D. Graner, William O. Cheswell, Thomas A. Dean and Joseph F. McKendrew.

The company is assigned to 146 boxes on first alarm, 306 on second alarm, and 48 on third alarm, besides being subject to special calls at any time.

JOHN GRADY,
Fire Commissioner.

Personal Inspection Reduces Fire Loss

COLUMBIA, MO.—There are many methods of attacking the fire prevention problem; some are particularly suited to one city and some to others. When I was appointed chief of the fire department of Columbia, Mo., I decided that personal inspection would prove the most satisfactory.

The city of Columbia has a population of over 15,000, not including the 5,000 students in the universities. The first move was to ask the assistance of the presidents of the two women's colleges and the superintendent and teachers of the public schools in organizing fire drills. This was done at once. Fire prevention lectures and discussions were held at the colleges with great success. The next step was to make a minute and careful survey and inspection, myself, of the buildings of the city. Every building, of whatever importance or use, was included in the scope of the inspection. Fire escapes were ordered erected on buildings that had never known them, and property owners and tenants coöperated with us in cleaning out all the nooks in their houses which had been storage places for inflammable materials. Even the municipal buildings were not immune from inspection, and many changes were found necessary to make them sufficiently fire-resistant. The local press proved of great assistance and published daily accounts of the progress of the inspection and the work which was being done, mentioning property owners who had been particularly interested and enthusiastic in their clean-up work.

One of the best results of this work was shown in the fire losses of the three years immediately connected with the campaign: the year before the clean-up work began, $177,000; the first year of the clean-up work while it was still being pushed, $20,000, and the year after the first intensive clean-up, $12,000. We do not claim that this was the only method which might have been effective in Columbia, for other schemes might have worked out equally well, but another factor entered into the choice of this method: the writer had just been appointed chief and wished to become more fully acquainted with the sections of the city with which he had had little or nothing to do.

By accomplishing these two purposes, it is believed, this system of inspection for fire prevention was the most effective.

One inspection is not considered the end of the work from the fire prevention standpoint, for it has been continued whenever and wherever it has been deemed necessary. There are bound to be a few lapses in the vigilance of tenants and owners, so we have been on the alert to remind them. However, it may be fairly said that there is less need for constant rigid inspection, as the people have been awakened thru the press to their duties in fire prevention.

In order to make the fire-fighting force more effective, an Anderson motor fire truck, shown on page 362 of this issue, was added to the equipment and an auto roadster for the use of the chief. The motor apparatus has paid for itself many times thru its effectiveness in enabling us to reach fires more rapidly and in enabling me to interest a higher type of men in this work than with horse-drawn equipment.

EARL N. KURTZ.
Fire Chief.

CHIEF KUNTZ POINTING OUT DANGEROUS FIRE HAZARDS

Traffic Signal Minimizes Danger at Short Turn

Westerly, R. I.—There are probably many cases of very short turns and bad street intersections at or near fire stations all over the country, and practically every fire chief realizes their danger. The difficulties are multiplied rather than lessened by the use of heavier apparatus and motor trucks, which, when once under way, are less easily controlled and brought to a stop within a reasonable distance than the older and lighter apparatus.

This difficulty has been somewhat overcome and the danger of accident minimized in Westerly thru the installation of a gong and light signal. The large, heavy hook and ladder truck which makes the turn into Broad Street from Union Street has always experienced some difficulty with the traffic at that street intersection. Now, since the erection of the signal, the truck is able to make the turn at greater speed and with added safety, and also with perfect confidence that the street will be cleared of traffic by the warning signal and by the police so long in advance of the arrival of the truck that even the stragglers will be out of the way.

The traffic signal is operated in a very simple way which is almost foolproof and positive in action. I had a switch installed on the jam of the door of the station in which the truck is located. When the door is opened as the truck leaves to answer an alarm, the switch also is opened and the big 16-

CORNER OF BROAD AND UNION STREETS, WESTERLY, R. I., SHOWING WARNING GONG AND LIGHT ON POLE

inch gong at the corner of Broad and Union Streets begins to ring. At night, in addition to the gong, the large red light shines out to warn traffic. The warning continues until the apparatus has passed the corner.

I believe that if more attention was paid to simple signals such as I have described above, a great many of the accidents in which fire, and particularly motor, apparatus is involved would be eliminated. The accidents are seldom, if ever, actually the fault of the driver of the apparatus, for he is supposed to have a clear road ahead; but the danger is brought in by the presence of vehicles which should have had adequate warning to enable them to clear the street for the fire apparatus.

S. G. COTTRELL,
Fire Chief.

- HEALTH - DEPARTMENTS

Health Centers, a New Agency of the Health Department

BUFFALO, N. Y.—A "Health Center" is a sub-station of the Department of Health, organized for curative and preventive work in a given district, to bring its activities in close relation with the needs of the people. The first Buffalo Health Center was limited to infant welfare and dental work and the second undertook additional preventive work.

Recognizing that the care of the city's sick poor was being conducted under an antiquated system with unsatisfactory results, the representatives of the City Poor Department, the Health Department and the leading philanthropic agencies of the city held a conference for the purpose of considering and formulating modern and advanced measures.

Consequent upon this, the obsolete system in question, with twelve physicians caring for the indigent poor incidentally to their private practice, was abolished, and four civil service medical men, properly compensated and giving their entire time to the work, were substituted. For administrative purposes, the city is now divided into four districts with a Health Center established in each, one of which is a central dispensary to which to refer cases not properly coming within the scope of the others. A uniform standard system of keeping records is pro-

vided for, with interchange between all social service organizations to prevent duplication and imposition and to secure efficiency. The reorganization has had highly gratifying results.

The organization in each Buffalo Health Center includes an attending medical staff, a City Physician and a Department of Health nurse and Registrar. Nursing of the sick poor in the district is cared for by the District Nursing Association.

The service provides the following:

1. A well-baby clinic where nutrition is supervised and mothers instructed
2. A sick-baby clinic
3. Nose and throat, ear and eye, and skin clinic
4. A medical clinic
5. Prenatal clinic for the guidance of expectant mothers
6. A dental clinic with a full-time staff for school children (additional to other city free dental service)

The Centers are further utilized as distributing points for supplies for tuberculosis cases—milk, eggs, napkins, etc.; for supplying the medical profession with laboratory outfits; for submitting pathological secretions, blood, etc.; for laboratory examination. Sanitary and other complaints are also received and acted upon.

Tuberculosis cases are referred, according to indication, to a special dispensary of the Tuberculosis Association and the City Municipal Hospital or to the J. N. Adam Memorial Hospital at Perrysburg, N. Y., for incipient cases.

Venereal cases are referred to the Urologic Hospital, maintained at the Municipal Hospital. This hospital, opened prior to the reorganization, has forty-six beds, conducts an outdoor service and is in charge of a chief surgeon and staff. The facilities are free and also available for private cases. The Bureau of Laboratories makes all tests. Wassermans are made as a routine procedure, and, with those made for other Health Centers, are recorded under a general card index system to prevent duplication.

An adjunct service of supervision of the work of midwives is maintained by the Bureau of Child Hygiene. Every midwife attends a course of lectures and receives individual instruction when necessary. Her technic in at least one confinement case is scrutinized and her surgical bag is subject to routine inspection. The condition of every infant and every mother attended by a midwife is investigated, with particular reference to the prevention of blindness. When eye irritation is present, a microscopic examination is made of the secretion, and the case is attended by a specialist until recovery. This preventive work has received the highest praise from the National Society for the Study and Prevention of Blindness.

Every Health Center case is investigated, a record is kept, and these records are interchanged with all other social organizations.

Bearing on this work, a sanitary survey of housing and sanitary conditions is being made of the entire city. In addition to ordinary unsanitary conditions and ordinance violations, many cases of physical, mental and moral deficiencies have been revealed and suitable corrective measures have been taken.

Experience shows that the Health Center brings the Department of Health in close relation with the people and elicits a responsive attitude. It secures the reporting of contagious diseases and lessens their spread. Morbidity and mortality are greatly influenced. Duration of sickness is lessened and restoration to health promoted by securing selective and appropriate hospital and other care for the sick and by following up cases of convalescence after institutional treatment. Prenatal and child welfare work makes for better individuals, and hospital patronage by pregnant women is increased. Traditional prejudice and distrust of hospitals and dispensaries is offset and hospital care of contagious cases increased.

The success of these centers is largely due to the invaluable assistance and cooperation of the Charity Organization Society, the District Nursing Association, the Tuberculosis Association, the Infant Welfare Milk Stations, and other organizations, and to the unselfish interest and industry of the public health nurses, whose valuable services should be extended.

Finally, the Health Centers have demonstrated that all social service agencies, philanthropic organizations, hospitals and dispensaries, should be correlated for successful public work.

FRANCIS E. FRONCZAK, M. D.,
Health Commissioner.

Physical Examinations of Food Manufacturers

Montclair, N. J.—The Montclair Board of Health was organized in 1894 and has always been very active. The question of politics has not been considered either in the appointment of the members of the Board or in the appointment by the Board of its staff. The Board has merited the confidence of the governing body to such an extent that it has received all of the funds requested in its budget. For the use of the Board during the present year the City Commissioners appropriated $12,000, which was $500 more than called for in the budget. In addition to this amount the Board has at its disposal about $1,500 which is derived from miscellaneous office receipts. As the town has a population of about 27,000, this gives a per capita appropriation of 50 cents for health expenditures.

Almost without exception, since its organization more than twenty years ago, the Board has felt that the employment of a full-time sanitary engineer health officer has been far more satisfactory than would have been the employment of a part-time medical man.

The supervision of the food supply of the town has been at the forefront of the activities of the Board. The milk supply has been rigidly supervised and Montclair was the first town in New Jersey to prove in the State Supreme Court the right of a municipality to require the tuberculin test of all cattle from which raw milk is produced. The ice cream supply has been supervised for years and the results of the analyses, together with the results of the milk and cream analyses, are published and distributed to every home in Montclair. The Board also has an ordinance which it enforces providing that only properly inspected and stamped meat shall be sold in town. The character of the meat that comes from slaughter houses where there is no inspection is often not above suspicion, for it is to this class of slaughter houses that diseased animals are taken, as the owner knows that in many cases the animals would be condemned to the fertilizer tank if they had to pass the scrutiny of a veterinary inspector.

The Board also requires that all glasses and spoons at soda water fountains and at saloons shall be washed and rinsed in hot water after each use, or else that individual containers and spoons shall be used.

One of the latest requirements being made by progressive boards of health is that the food delivered to the citizens shall be manufactured and handled by persons whom we know to be free from communicable diseases. Montclair has recently completed an examination to determine the health of food manufacturers. The examination was extended to cover all employes in barber shops, and cooks and waitresses in public dining rooms, as well as food manufacturers. Out of 176 persons examined, one case of gonorrhœa and one case of tuberculosis were detected, which was a very satisfactory showing. These examinations were made at the expense of the local board of health whenever the request was made, and the figures given do not include milkers and all other handlers of milk, who are also required to undergo a thoro physical examination every three months, but at the expense of the licensed milk dealer.

The examinations include in each case a thoro physical examination for tuberculosis and venereal diseases and such diagnostic tests (Wassermann, sputum, etc.) at the expense of the Board as may be considered necessary by the examiner. The Widal test must also be made for all these persons except barbers, but need not be repeated as a part of subsequent examinations. All new employes must be examined before they begin work. Identification cards are given to each person who passes the examination and there is a penalty of $25 for employing a person who has a communicable disease or who has not been examined as required by the ordinance.

The ordinance does not at present require the examination of persons engaged as clerks in food stores, although it is desirable that they be included. When the ordinance was passed in 1914 it was deemed advisable to make a beginning along the most important lines and not create too widespread an opposition with possibilities of long-drawn-out legal contests.

The first examination revealed one person who gave a positive Widal test, but the employe gave up his position and could not be located to determine whether or not he was a typhoid carrier. One bad case of gonorrhœa in a cook was also detected.

While these were the only diseases that were detected, it is apparent that much more good was accomplished, as several bakers gave up their positions rather than submit to the examinations.

While the ordinance provides that these examinations shall be made every three months, this has been found to be unnecessarily burdensome, and examinations every six months are probably sufficient. It must be recognized that acute diseases among food handlers cannot be prevented or ordinarily detected by examinations at such long intervals of time, but tuberculosis and venereal diseases can be controlled. It should be of interest to note that during one of the examinations one of the local bakers showed some symptoms of scarlet fever. He was, of course, removed from the bakery and isolated, and in a day or two he developed a well-marked case of the disease. Cases of this kind are extremely rare and they are merely coincidences when they occur.

Another ordinance that is rigidly enforced in regard to foods is that which provides that all bread, cake, candy and other articles which are eaten in the condition in which they are sold shall be securely protected against flies, dust and other contamination (wrapped or under cover) at all times while being delivered or while displayed in stores.

CHESTER H. WELLS,
Health Officer.

CITY CLERKS

Old Brick Streets Resurfaced with Asphalt

KNOXVILLE, TENN.—In 1892 the city of Knoxville, under the famous "Kid Council," paved several streets with brick on a 6-inch natural cement concrete base. Since that date, Knoxville, being a growing city, has torn up the brick paving for laying water and gas pipes and conduits; the brick, which time had worn away, altho they were of excellent material, became unpleasant to drive over, and the noise of the heavy wagons, trucks and autos was grinding on the nerves of those who occupied the buildings on these streets. The streets around the City Hall and Market House had been paved with brick, and at times when traffic was heavy it was almost impossible to hear the proceedings of the Commission. The

A BRICK-PAVED STREET RESURFACED WITH ASPHALT, IN KNOXVILLE, TENN.

depressions in the old brick streets permitted mud and filth to collect.

The preceding Commission and the business men on Gay Street, which is one of the principal brick-paved business streets of Knoxville, caused an ordinance to be passed and this street was repaved. The old cement foundation was removed and a new one put down, and sheet asphalt was used for the surface.

How to relieve the taxpayers of the noise and the paved streets of worn brick at a low cost was a problem.

The Murray Construction Company, a street paving corporation of Knoxville, requested the City Commission to allow them to resurface a portion of Wall Street at the north end of the City Hall and Market House with sheet asphalt, this section having the most travel of any section of the city and being part of the brick paving that was laid in 1892. The work was done at the expense of the construction company, and after a trial of several months the City Commission picked out a number of other brick streets that were in bad condition and advertised for bids for resurfacing them with sheet asphalt.

Owing to depressions in the streets it was almost impossible to figure the binder coat as to yardage, and bids on the binder coat were submitted on a tonnage basis and on the sheet asphalt per square yard. Several firms submitted bids on the first letting for resurfacing; the Murray Construction Company, being the lowest bidder, was awarded the contract, and the work was done at once.

First, the brick is thoroly swept; this is followed by placing on the binder coat, filling up the holes, surfacing the old brick with binder, and rolling, and then a coat of 1½ inches of asphalt wearing surface is placed on the binder. Trinidad Lake asphalt was used.

After the work had been completed it received such praise from the taxpayers and citizenship in general that the residents on other brick streets requested the Commission to have resurfacing done in their sections. The result is that practically all of the brick streets in Knoxville have been resurfaced with sheet asphalt, making a total of 75,000 square yards of resurfacing.

ROBERT P. WILLIAMS,
Recorder.

PARK DEPARTMENTS

City Park Commission Donates Saplings for a County Boulevard

Roanoke, Va.—Last winter the city of Roanoke had about 5,000 young Norway maples growing in the municipal nursery in the suburbs of the city. These trees were given to the city when they were nothing more than mere slips. In the five years they have been in our possession they have

OLD BRICK PAVEMENT IN KNOXVILLE BEFORE RESURFACING

developed into fine young trees. There appeared to be no particular use for all of these trees in the city for some time to come.

The writer, realizing that some use should be made of this abundance of shade trees, made a tentative offer to the County Board of Supervisors just after the January meeting of the Park Commissioners. The offer was unanimously ratified by the Commissioners at the February meeting. The cooperation of the County Supervisors was requested only in making an appropriation for the planting of the trees and in seeing that the planting was done. We asked them to accept 1,400 first-class shade trees to plant at 50-foot intervals on both sides of the county road from Roanoke to Salem, the county seat. We stated that if they would accept this offer and plant the trees at once—it was then rather late for tree planting, as the sap had already begun to run—we would aid by starting a similar line of the same stock of trees from our own City Hall; thus there would be formed a beautifully shaded avenue from the Roanoke City Hall to the County Court House in Salem, a 6½-mile boulevard, in which the county and the cities would take great pride in a few years. The trees had an estimated value of $1,000, and the cost to plant them could not exceed 10 cents apiece, even with the use of dynamite to properly prepare the soil. In any case the appropriation needed would not exceed $200.

On February 19 the County Board of Supervisors met in Salem and agreed to take advantage of the offer, but appropriated only $50 for the planting. This seemed to put a wet blanket on the success of the proposition, but two young and influential citizens of the district donated the remaining funds necessary to carry the plan to completion. Not only did these men back up the planting with their money, but they saw to it that the work was rushed thru in time to save the trees.

The proposition was made to the county on January 26, and on March 26, just two months to the day, the work was completed. It took forty-five days to get up steam and only fifteen to do the planting.

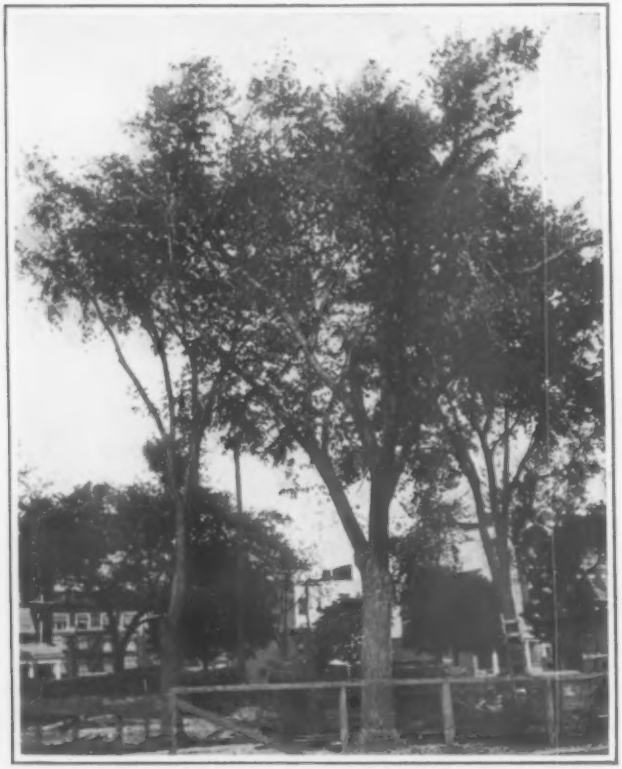
Early in June I personally made a trip over the entire length of the boulevard and saw but one tree that was not flourishing; all the others were in perfect condition in spite of the fact that they were transplanted after the sap began to flow. The actual money cost of this improvement was $211, but added to this should be the energy and effort expended by those interested in the work, in pushing it to a successful completion.

L. E. LOOKABILL,
Vice-Chairman, Park Commission.

STATELY ELMS WHICH WERE SAVED BY ALTERING BROOKLYN SUBWAY PLANS

Subway Cut Narrowed to Save Parkway Trees

BROOKLYN, N. Y.—It is said that Napoleon changed the course of a great highway in order to save a magnificent tree



ELMS PROTECTED DURING SUBWAY CONSTRUCTION

from destruction. Modern instances of such regard for the beauties of nature are more difficult to find, but there is at least one striking case of this sort worthy of record. A little over two years ago plans were made public for the construction of a subway under Eastern Parkway in Brooklyn. This is an avenue about two-and-a-half miles long, with three roadways and six rows of trees. Four of these rows are American elms, some of which have grown in their forty-odd years of life to very noble proportions, making a complete archway of foliage over the walks on either side of the center drive. There are, all told, about 1,300 of these elms, and, according to the original plan, about two-thirds of them were doomed to destruction.

The center drive on Eastern Parkway is 60 feet wide from curb to curb, and a row of elms grow close to either curb. The subway as originally planned would have occupied nearly all the space between the curbs; and as the cut is very deep in many places, it appeared impracticable to so shore the cut as to save the trees; in other words, the gross width of the cut would take in the space occupied by the nearest rows of trees, which would therefore have to be removed. At the stations conditions were worse, for here the width of the cut would require the removal of all the elms.

The proposed destruction of these beautiful trees caused a wave of indignation thruout the city. Commissioner of Parks Raymond V. Ingersoll was particularly active in protesting against their removal, and as a result of his activity and the coöperation of the Public Service Commission the plans were changed. The original plan called for the construction of four parallel tracks, while the new plan arranged for a double-track subway two tracks wide, thus narrowing the cut and making it possible to save all the trees except at the stations, where some trees still had to be sacrificed; the number lost, however, was trifling compared with the first proposition, and a clause in the contracts required them to be replaced with 6-inch trees at the completion of the subway.

Thus not only were most of the trees saved, but the cost of construction was actually lowered somewhat. Nor does the new plan inconvenience the public to any appreciable extent, for traffic is to be so arranged that trains bound from Manhattan will be on the upper level, thereby requiring Brooklyn-bound passengers to climb but one flight of stairs when on their homeward journey.

Provision was also made in the contract for the proper care of the trees while the subway was under construction.

E. H. MOORE,
Arboriculturist, Department of Parks.

PUBLIC WELFARE - AND SERVICE -

Motor Trucks for Human and Other Freight

KANSAS CITY, MO.—During the last five years we have placed more and more reliance on the use of the motor truck for general use about the Municipal Farm of Kansas City, which is located at Leeds, Mo. Previous to this time teams were employed in the service, but the motor truck illustrated herewith has replaced most of them.

This two-ton Packard truck was constructed primarily for the transportation of both male and female prisoners to and from the municipal courts of Kansas City, both for the Municipal Farm and the Women's Reformatory. Both these institutions are under the jurisdiction of the Board of Public Welfare.

In spite of the constant use of the truck for this purpose for five years, averaging about 70 miles per day, it is in very good condition. The farm is located about 8 miles from the court, and the trip is made over very fair roads. In addition to transporting the inmates, the truck is employed in making extra trips thruout its spare time carrying freight for use at the farm and delivering vegetables raised by the inmates to the various municipal institutions within the city. Further, the car carries the officers of the farm to and from the car lines in the morning and evening.

Summing up our experience with this step in economy and municipal service, I believe it is safe to say that it would be impossible for us to work as advantageously with several teams as we are operating with this truck.

J. O. STUTSMAN,
Superintendent, Municipal Farm.

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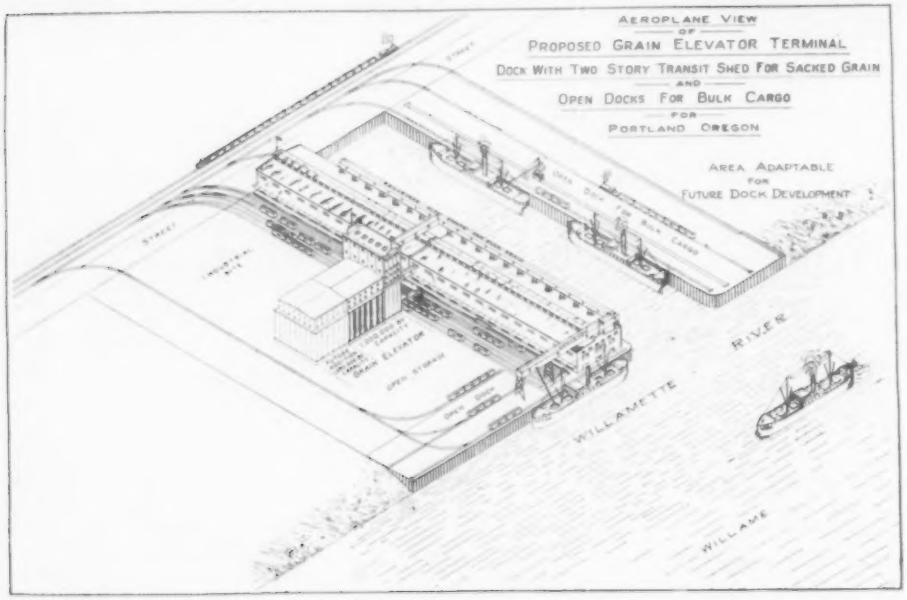
New Municipal Grain Elevator

PORTLAND, ORE.—Portland for many years has been the chief grain export port of the Pacific Coast. The custom of handling grain in sacks rather than in bulk has been one of the distinguishing features of the Pacific Coast, and this method has been practiced since wheat was first raised in this section of the country. The grain crop was then almost exclusively exported in sailing vessels to Europe around the Horn, the average vessel requiring from four to five months to make the trip. Grain in bulk was more liable to heat than grain in sacks

MOTOR TRUCK USED ON THE MUNICIPAL FARM OF KANSAS CITY, MO.



on the long voyage. The grain then went in full cargoes, and in bulk the damage from the shifting of the cargo with the roll and pitch of the vessel was a serious matter.

When, a few years ago, steamers were placed in the grain export business there was no change in the method of carrying grain around the Horn, even tho the time of the passage was practically cut in two; and the Panama Canal, because of slides and war conditions, has not yet had a controlling influence in changing the method of shipping grain from the Pacific Coast to the Atlantic Coast or to Europe.

In anticipation of the opening of the Panama Canal for traffic in 1915, there had been a steadily growing desire among the farmers of the grain-producing sections of the Pacific Northwest to discard the use of sacks and get to the system of handling their crops in bulk, as is now being done from nearly all parts of the world, Australia and the Pacific Northwest being the most important exceptions. While bulk handling had been practiced to a limited extent for several years in Oregon, Washington and Idaho, it was only during 1915 and 1916 that the movement assumed definite shape; and, tho only a start has been made in this direction, considering the large territory involved, it is the first time the bulk handling of grain has had so uniform a backing by the growers.

After a thoro investigation as to the permanency of the progress of the bulk-handling movement in the interior, the Commission of Public Docks decided, in order to protect the port's export grain trade, to go before the people at the general city election held June 4, 1917, asking for authority to issue bonds in the amount of $3,000,000, for the purpose of providing elevator and additional port facilities for handling grain in bulk, and other freight. This bond measure carried by a very large majority.

With funds thus made available, the Commission of Public Docks will at once proceed with the construction of an elevator of a capacity of 1,000,000 bushels as a first unit, with space and connections arranged to increase the bin storage to 2,000,000 bushels when the necessity for such increase arrives. The working house will be built at this time for the larger capacity storage.

The elevator will be a combined bulk and sack elevator, to enable grain to be shipped by either method. It will be a modern, fireproof, reinforced concrete structure, costing approximately $900,000 for the first unit. In addition to the elevator, there will be constructed a pier and slip about 1,000

feet in length, and also an open storage dock, with gantry and locomotive cranes and sheerlegs for the efficient handling and shipping of heavy material and bulk cargo.

The above construction will cost approximately $2,000,000, and will provide berthing space for six large vessels at one time. The unexpended balance of the bond issue will be held in reserve to furnish such facilities as may from time to time be demanded by shipping and which cannot now be anticipated, as the Commission's policy is to promptly supply any accommodation needed and facilitate the shipping of the port.

G. B. HEGARDT,
Engineer, The Commission of Public Docks.

HIGHWAY DEPARTMENTS

A State Highway Department Publicity Bureau Aids Counties

OKLAHOMA CITY, OKLA.—The Oklahoma State Highway Department was organized in June 26, 1915. It is from this date that the good roads movement in Oklahoma began. Prior to the passage of the act establishing the Highway Department, half the state was practically without roads and the other half scarcely better off.

The Commissioner of Highways, George B. Noble, realizing the necessity of a bureau within the organization to spread the precepts of good roads and to instruct the public thru the newspapers, suggested the establishment of a publicity bureau. This suggestion was favorably acted upon May 1, 1917.

The functions of the Publicity Bureau are to educate the public in the work of the highway department and to inform them of the necessary steps to be taken to secure the maximum of state and federal aid for their highways. The federal and state funds available for road building in Oklahoma in the next five years amount to nearly $8,000,000, and in addition there will be far more money expended for local improvements. In order to obtain the greatest returns for the money expended, both state and local road builders must work in harmony. It is our task to bring about the necessary understanding for this needed efficiency.

The vehicles employed for this publicity work are bulletins mailed under first class postage where limited numbers are to be reached, and the local newspapers thruout the state. In time it is hoped to be able to increase the appropriation sufficiently so that it will be possible to publish a monthly magazine devoted to the good roads cause and the work of the Highway Department.

The present bulletins are mimeographed sheets distributed almost weekly. Among the most recent is a bulletin on "Convict Labor on Roads." This bulletin discusses the labor problem in Oklahoma and gives some data on the costs of convict labor in five different counties, as follows:

"LeFlore County had a camp of 20 men. The cost per man for board in camp during the month was 23 cents per day, 2 cents per day in excess of the prison cost for board for the same time, or $12 for the use of 20 men for the month. The cost for feed of teams and board of the three men in charge was not given.

"Pottawatomie County had the same number of convicts. The cost of board per man was 28 cents per day, 7 cents in excess of prison cost, or $42 for the use of 20 men for the month. Feed of team, etc., not given.

"Tulsa County, with the same number of convicts, paid 31 cents per day for board, 10 cents in excess of the prison cost, making a total expense of $60 for the use of 20 men for the month. Other items of expense not given.

"Pittsburg and McCurtain Counties each had 21 convicts and paid 32 cents per day for board of each prisoner, or 11 cents in excess of prison cost, making a total expense of $66 for the use of 20 men for the month. Other items of expense not given.

"Greer County had 21 men and the cost of board per man during the month was 36 cents per day, 15 cents in excess of prison cost, or $90 for the use of 20 men for the month. Feed of teams not given."

This is an example of the information we try to furnish to the different road building organizations thruout the state, that they may know how the costs for their work compare with similar work in other parts of the state.

T. F. HENSLEY,
Manager, Publicity Bureau.

REVENUES – EXPENDITURES – BORROWING – PURCHASING

MUNICIPAL FINANCE

ACCOUNTING — AUDITING — BUDGET MAKING

The articles appearing in this department from month to month are prepared by the New York Bureau of Municipal Research. The following subjects have been covered during 1917:

The Problem of Additional Sources of City Revenue
Aids to Efficient Buying
Serial Bonds Versus Sinking Fund Bonds
The City Budget as a Basis for Administration
Unit and Job Costs a Necessity for Good Administration
Audit and Payment of Claims
Assessing for Local Improvements
The High Cost of Municipal Stores Accounting

Payrolls—Their Preparation, Certification, Audit and Payment

By G. M. MacAdam

APPROXIMATELY fifty per cent of the money raised by taxation for the operation and maintenance of the average municipality is disbursed by means of the payroll. Yet in spite of this fact, it is undoubtedly true that as little constructive consideration is given to payroll problems as to any other phases of municipal accounting, with the result that inadequate municipal payroll systems are the rule rather than the exception.

Payroll defects vary greatly, mainly according to the size of the municipality, according to existing laws and ordinances, and particularly according to the efficiency or ability of payroll officials. What might be a defect in a large city might be permissible in the limited problems of a small town. Direct violations of approved payroll methods might in some instances be made compulsory by faulty laws. The majority of defects, however, are due to the indifference or inefficiency of officials.

Defective Payroll Organization

One of the important reasons why so many poor payroll systems are to be found is that there is seldom one central payroll office or division with authority to prescribe uniform procedures and forms, and more especially with the right to enforce the observance of any and all rules and regulations which may have been adopted.

Another important reason is that few administrations express a willingness to shoulder the censure of employes—usually entirely unwarranted—which frequently follows radical payroll changes, even tho a month or two after the change has been effected the advantages thereof will be apparent to all and all criticism forgotten.

Time Records

A certified time record is as essential to a payroll as an acknowledgment of receipt of goods is to an invoice. Few accounting or disbursing officers would consent to pass an invoice for payment unless they had some definite written assurance that the material or supplies billed thereon had actually been received, yet it is very common to find the same officials disbursing payrolls (which are nothing more than invoices for personal service) absolutely unsupported by authentic evidence that the amounts being paid have actually been earned. Oftentimes payrolls are supported only by verbal information or negative reports of absences. In many cases such information is probably correct, but "probable" information has no place in any well-regulated accounting system.

There is nothing complicated or unreasonable about a time record; it is merely an official book or sheet on which the exact time worked by each employe is currently recorded by a superior having first-hand knowledge of the facts. It is only applying common-sense business principles instead of adding to governmental "red tape" to ask foremen of gangs or heads of organization units officially to report on the amount of personal service which should be paid for.

The best form of time record is a loose-leaf sheet which may be prepared in duplicate—by carbon process. The form should provide spaces for the insertion of the pay period and names of employes, and separate columns in which to enter the time worked each day of the pay period. It may likewise provide special distribution columns in which the time worked may be segregated according to jobs, departments, expense classifications, etc. This form should be printed in pads or small books, so that by means of a sheet of carbon paper a duplicate copy may be secured by one process. At the end of the pay period the total time earned should be entered in a "Total Time" column, and any other necessary distributions should be shown in other columns which may be provided. The original copy should then be certified as correct by the officer in charge and be sent to the central office to be used for payroll, expense and unit cost purposes. It is essential that time reports be certified as correct, otherwise they would have no more accounting value than a verbal report.

Time records should not be confined to laborers or weekly employes, but should cover every hour of personal service which is paid thru the payroll and should be filed and preserved just as carefully as approved invoices.

Form of Payroll

One of the strangest features and strongest points of criticism in the average payroll situation lies in the multitude and inadequacy of payroll forms that are used. They vary from small bits of scrap paper to elaborate sheets or books, in which may be copied much unnecessary information. The writer has seen payrolls carelessly prepared in pencil on sheets or cards no larger than the average business card, which are destroyed when payment has been made; also payrolls prepared in such detail that much work is duplicated. Separate payroll forms are frequently used by each organization unit of a municipality and are prepared in almost as many different ways. In some instances it appears as if the designing and preparation of payrolls had been left to the whims of the various departments. This is an expensive and inefficient privilege. It is too often the annoying experience of the head of an accounting or payroll division to find himself forced to regulate the procedure of his own division more in accordance with the various procedures and forms which the different organization units have been permitted to adopt rather than to be allowed to prescribe standards which would amply and more efficiently meet the needs of all. Special permission granted to one official soon creates a desire on the part of others for similar concessions, with the inevitable expensive and inefficient results.

Oftentimes the diversity of payroll forms is due to their use for expense and cost purposes, for distribution or for showing pension or other special deductions. This is not a good reason for having a variety of forms, because the payroll should never be used as a labor distribution or for other special purposes if it means the sacrifice or a decrease of the value of the payroll as a voucher. Deductions should require at the most only the addition of one or two special columns on any standard form.

As a matter of fact, a careful analysis of all so-claimed special payroll problems must arrive at the same result, namely, the need of some document by which personal services may be properly vouchered. The information necessary for such a voucher document cannot vary greatly, for the reason that the vouchering factors are everywhere and in every problem the same—the name of the employe, the rate of pay and the time worked. With the principal factors admitted as standard, there are seldom any sound arguments against the adoption of standard payroll forms.

It is therefore believed, and this belief is supported by many successful installations, that with rare exceptions it will be to the advantage of every municipality to adopt one standard payroll form, which by providing spaces or columns for the following

information would cover all of the essentials necessary for the vouchering of personal services:

Period covered
Name of employe, title of position and rate of pay
Amount of time worked
Gross amount earned
Amount and nature of deductions
Net amount payable
Distribution of gross amount earned according to funds (not jobs, expense accounts nor appropriations)
Certifications

In case payment is made by cash, it may also be advisable to have a space provided opposite the net amount earned, for the signature of the employe.

Anticipation of Time

In many localities existing laws or local rules and regulations require that all or many salaried employes be paid on the last day of each pay period. As desirable as it is to pay employes promptly after the end of the pay period, it is just as undesirable to prepare payrolls in such a method or at a time when their correctness may not be truthfully certified. Payrolls which reflect facts are the only kind of payrolls which have any place in the financial transactions of a municipality. Yet wherever there is a large number of employes, it is a physical impossibility for any permanent payroll force to correctly prepare all of the payroll and pay checks and to make payment on the last day of the pay period without anticipating or guessing the amount of time which will be earned by each individual for periods varying from one to five or six days.

As clever and adept as many payroll clerks are, still they cannot always anticipate correctly. A wrong estimate always means either a subsequent adjustment—annoying to all concerned—or an actual loss to the municipality. In fact, adjustments always mean losses either in time or in overpayments. Any argument in favor of anticipation of time means that they cannot be certified as absolutely correct. It would be equally logical to argue for the payment of invoices before all of the goods billed thereon had been reported as received.

One of the reasons frequently mentioned for the continuation of this practice, which is so foreign to modern business methods, is that administrations hesitate to assume the responsibility of withholding salaries even for a few days. But when once the change has been made, pay days would fall due at the same regular intervals, with absolutely no inconvenience to the mass of employes. It is doubtless true that a certain amount of unfavorable and equally unjust criticism would follow any change in pay days, but such criticism would be as shortlived as it is unjust and could be easily counteracted by the savings effected.

Certifications of Payroll

Payroll certifications are exceedingly important. Only by such means may the responsibility for correctness be definitely and legally fixed. Yet in spite of this fact, it is surprising how many uncertified payrolls are presented for payment. Under such conditions the responsibility for errors—either intentional or accidental—may be passed from one to another with no way of locating the real culprit. The knowledge of such an apparent defect may act as an incentive for further errors or abuses, and surely tends toward carelessness. In any event, chief executives, auditors and paymasters have no real right to approve, audit or disburse unsigned payrolls.

Various certification features which are essential in a large city may often be combined conveniently in smaller units of government, or even omitted. However, in any sized municipality it is only applying common-sense business principles to insist that each payroll bear an unqualified statement or certificate of correctness as to the following: authority of appointment; time actually earned or worked; computations, deductions, footings and recapitulations; authorized salary rates and positions; sufficiency of funds; funds chargeable.

Audit

Payroll audits must necessarily vary greatly according to the size of the municipality, and to the available auditing organizations. They are, however, fully as important as the audit of any other vouchers, and, in general, should be subject to the same procedure followed in connection with invoices for material and supplies.

In large communities where civil service rules and regulations are in effect, payrolls are, or should be, subject to two different audits, one by civil service examiners as to the authenticity of the positions and salary rates, and another by the comptroller, auditor or by whatever official has been charged with the duty of auditing all claims before payment, as to the correctness of all extensions and footings.

The civil service audit necessarily must

be limited to an examination of the payroll to see that each and every person thereon is a regularly authorized civil service employe, and that the rate at which he is carried is the rate authorized under the terms of his appointment or promotion. Where civil service rules do not apply, this examination should be made in some central office where complete records are kept of each employe. Whenever practicable, it should be done by other than payroll clerks.

The other current audit should relate to the correctness of extensions, footings, funds chargeable and recapitulations. Wherever a general auditing office exists, the audit of payrolls is frequently adequately performed. However, in the small communities, the absence of a special auditing office is liable to be equivalent to no audit. The work of payroll clerks should be verified by independent employes who may or may not be attached to the same office. The fact that an audit has been made should be so certified on the face of the payroll before being transmitted for payment.

In addition to the pre-audit, payrolls should be subject to a further examination after payment has been made. Examination of payments can have but little real value if the accuracy of the payrolls themselves has not been previously verified in every respect.

Payment

Payrolls may be disbursed either in cash or by check. Of these two methods the latter is by far preferable. This, however, does not mean that it is the one more commonly used. In fact, it is probably true that cash payments prevail, especially in the smaller cities.

Cash payments usually require the employment of special paymasters, the handling—frequently in insecure places—of large sums of money, the preparation of pay envelopes, the adoption of special methods of securing receipts for payments, and, with few exceptions, they result in serious losses of time. The main reason why cash payments prevail is probably the antipathy of the average municipal employe to a check. They seem to consider a city pay check as nothing more than a personal check which may or may not be honored at the bank and which in any event will require additional trouble before the cash may be received.

There is, however, a way by which this prejudice may be overcome. It is by the adoption of a self-identifying check, which after arrangements have been made with local banks may be cashed anywhere merely upon the proper endorsement by the payee. Such a form of pay check has been adopted in many departments of New York City and in San Francisco, and has proved to be highly successful. Its self-identifying feature is similar to the travelers checks issued by express companies and tourist agencies. It consists merely of an ordinary check form providing space on the face for the signature of the employe. This signature is not to be considered in any way as an endorsement, but is merely a specimen signature made in the presence of the foreman or paymaster before the pay check is formally delivered. If, upon presentation to any bank the endorsement made in the presence of the cashier or teller corresponds with the specimen signature on the face of the check, payment is made without question or charge.

Such checks may be cashed by wives or others at banks, stores and other places, not necessarily during the regular working hours, but at the convenience of the employe and at a great saving to the city. The successful adoption of the above style of pay check cannot be accomplished over night, but must be preceded by educational work among the employes, banks, merchants and city at large.

Use of Mechanical Devices in Preparing Payrolls

The work of preparing payrolls, even when all unnecessary duplications have been eliminated, is a problem requiring a large amount of clerical work. In many cities much of this clerical work has been eliminated by the use of mechanical devices. Machines are now available for printing payrolls, both before and after the computations have been made, for securing totals and sub-totals, for writing and signing the pay checks, for addressing envelopes, etc. The actual saving in dollars and cents which is thus possible is enormous, as has been proved in large cities and corporations. Cities whose payrolls carry from four to five hundred or more names might well interest themselves in the possibility of applying machines to their payroll problem.

News and Ideas for Commercial and Civic Organizations

Hallowe'en and Thanksgiving Celebrations

Making the Hallowe'en Spirit Profitable to the City

DANVILLE, ILL.—When the Romans of old were planning their festival to Pomona, they probably did not think of the mischief they were breeding for American cities. When the Druids celebrated *oidhche shamhna* in lighting fires and getting after evil spirits in their druidical way, it very likely did not occur to them that they were piling up grief for Danville. Later, when the English tried to sink their teeth in the bobbing apples on Hallowe'en, it was all innocent fun, with not a touch of deviltry in it.

These celebrations, which are older than Christianity, are the root of the trouble which has become general in American cities thru an overplus of energy and a desire to commit mischievous depredations, which is inherent in the average American boy.

Hallowe'en has become one of the most dreaded of the immovable feasts, and there is no computing the mischief which is done every year in celebrating it. In all cities the evil is sufficient to make a remedy devoutly to be desired.

Danville seems to have found the remedy, and after a trial of five years this city is ready to certify not only that the remedy cures, but that the Hallowe'en spirit may be converted into a source of actual revenue for the town and be made to supply amusement that is wholesome and desirable.

Five years ago Danville suffered from Hallowe'en depredations to an alarming extent. No gate was safe, no bossy in her barn was immune, no shrub could be sure that it would wake up the morning after in the same spot where it was when the sun went down. Conditions were sufficiently desperate to demand drastic action, but the police and parents were powerless.

It was then that a bright idea had its birth. If Hallowe'en must needs be celebrated, why not let everyone celebrate in one big, grand, masked frolic that would wear them out in innocent fun and raillery, so that they would go home decently to bed after getting their fill, and let alone their neighbors' property?

That seemed simple enough, and Danville decided to try it.

At first the celebration was merely local. The idea was taken up by the Chamber of Commerce and prizes were offered for unique costumes. There were many of these prizes and they were paid in cash—in fact, $300 was divided. The contestants were obliged to march in line past the judges before they could compete. The judging came late. This was done purposely to permit the throngs to tire themselves out in parading the streets before the awarding of prizes began.

Hundreds participated in the first parade, and thousands of spectators filled the streets. The contest for the prizes was keen and the interest in the show was unbounded—and, better still, Danville woke up next morning to realize that it had found a remedy for all it previously had suffered in celebrating Hallowe'en. Practically not a dollar's damage had been done. Shrubs were smiling in the gardens, Old Bossy was in her barn, the gate swung merrily on its hinges and not a porch swing was missing.

During three more Hallowe'ens the same results were obtained. Last year the Chamber of Commerce undertook to broaden the celebration. Special trains were run for fifty miles north and south to give the country people opportunity to come and share in the fun. Free attractions were provided in the streets. Under strict regulation, fakirs were permitted to sell con-

fetti and ribbon streamers and tin and paper horns. Many of the elements of the Mardi Gras celebrations in Latin countries were borrowed.

The result was that Danville entertained thousands of visitors. They came early and stayed late. Special trains at night took them home after a strenuous day of sightseeing, watching the maskers and patronizing the Danville stores, which did a land-office business.

P. L. WILLIS,
Secretary, Danville Chamber of Commerce.

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A Hallowe'en Mardi Gras

ZANESVILLE, OHIO.—The United Commercial Travelers was responsible for the very interesting Mardi Gras celebration which was conducted in Zanesville last Hallowe'en, for the financing of which the organization raised a fund of $1,400.

The festival began at one o'clock in the afternoon with a welcoming address to the Commercial Travelers, the citizens and the visitors, delivered by one of the city's prominent attorneys. Then one hundred Commercial Travelers, wearing tan coats and tan high hats, paraded thru the streets, headed by the Seventh Regiment Band. No regular minstrel organization ever made a better appearance. Following the parade, five free street acts were presented during the afternoon on the down-town streets, in order to hold the crowd in the business section. During the intervals between the street acts, the strangers had opportunity to visit the many good stores in Zanesville. The merchants had decorated their buildings and windows attractively, and the day's business for many of them was doubled.

A parade was given in the evening made up of industrial and individual floats and the floats of fraternal organizations, also of individuals gayly masked. The industrial and fraternal organizations participated for the most part in bodies. The first prize went to the Rotary Club for having the largest representation in line.

After the evening parade was over, the seven bands which had participated assembled in different sections of the down-town district and gave concerts. Fifth Street was roped off, the pavement sanded, and some of the maskers danced until a late hour. Others made merry by promenading and enjoyed themselves in other ways.

At ten o'clock a sensational aerial act was given by the "Aerial Howards." Mrs. Howard entertained the people by riding a bicycle on a wire stretched from one building to another one hundred feet in the air, while her husband performed on a trapeze suspended from the bicycle. They gave a fireworks display to represent their crossing Niagara Falls. This part of the evening's festivities was very much appreciated.

FRED GEIGER, JR.,
Secretary, Zanesville Chamber of Commerce and The United Commercial Travelers.

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A Municipal Thanksgiving

KALAMAZOO, MICH.—A new phase of community work was brought out in Kalamazoo last fall in the form of a municipal Thanksgiving. This was planned by a joint committee of clergymen, newspaper men and business men of the city to take the place of the numerous small church gatherings usually held on the morning of Thanksgiving Day and which are attended by only a small number of people. Instead of those, a Boy Scout parade and review were conducted. In the reviewing stand were prominent officials of the city and county, educators, and representatives of the Chamber of Commerce.

The evening gathering was held at the Academy of Music. The program was exceptionally interesting and the house was crowded to the roof. All denominationalism was apparently forgotten in the addresses delivered, which had been carefully planned and thought out with a view to appealing to the audience as a whole.

The meeting was presided over by the Mayor and was conducted much like a church service, including an invocation, responsive reading, singing of hymns, collection and offertory. Patriotic songs were also sung. The sermon theme of the evening was "God's Providence in the Development of America." Three addresses were made on this theme. The first of these was on "God in Our Nation's History," the second on "God in Our Nation's Resources," and the third on "God in Our Nation's Destiny."

In this age of individualism it is difficult to gather together people of all classes and denominations for a general meeting on any subject. This community meeting, however, was successful from every standpoint.

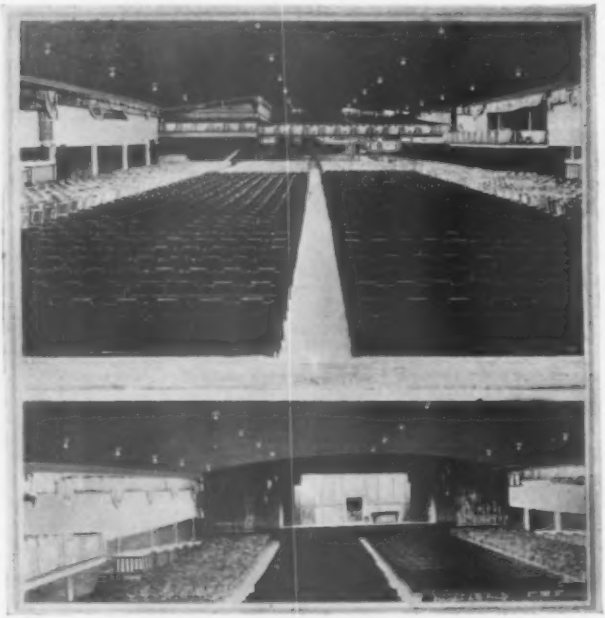
O. B. TOWNE,
Secretary, Kalamazoo Chamber of Commerce.

Toledo's Auditorium

Toledo, Ohio.—The improvements that have been made in the Toledo Terminal Auditorium have given the city a convention hall with a seating capacity of 5,000, suitable for all kinds of entertainments and conventions. The building was erected in the first place thru the efforts of the Civic Music League and the Toledo Commerce Club, as a place in which to experiment with grand opera, and discover whether it would pay at popular prices in a city of the size of Toledo. Two entertainments have been given each season, in which Geraldine Farrar, Destinn, Fritz Kreisler and other stars have been brought here, and at each performance the house has been crowded to its full capacity. The Civic Music League will continue to give these entertainments, and will be enabled, with the larger seating capacity, to give them at popular prices. Reserved tickets have been sold for from $3.50 to $10 for six performances. The acoustic properties of the hall are excellent; violin, piano music and speaking voices can be heard at the rear of the house very distinctly. The continued success of this undertaking will, no doubt, lead to the building of a municipal auditorium in Toledo's new civic center within the next few years.

Only one-half of the Terminal Building is used for this large auditorium. The rest is reserved for exhibition purposes. The chairs in the auditorium may be removed and the whole building converted into a combined convention and exhibition hall. The facilities allow freight cars containing exhibits to be switched directly into the building, so that heavy machinery displays may be unloaded there.

W. A. PHELPS,
Publicity Secretary, Toledo Commerce Club.



TWO VIEWS OF THE INTERIOR OF THE TOLEDO AUDITORIUM

Activities Advertised in Chamber of Commerce Window

Sherman, Tex.—The Sherman Chamber of Commerce is putting into practice the theory that if the windows of commercial organizations are in a conspicuous location their use for the purpose of advertising activities is as important to the commercial organization as are the show windows of the merchants' establishments to the merchants in advertising their wares.

The Sherman Chamber of Commerce has a large window front located on Travis Street between the public square and the post office. This window is being used constantly to set forth ideas advocated by the Chamber. For instance, a $30,000 bond issue which was desired for the equipment of the high school building had its advantages shown in a display in this window. The reason why farmers should dip their cattle to free them from ticks was the subject of another display. When the campaign to sell Liberty Bonds was being conducted, the window was used to good effect, as is shown by the reproduction on page 351.

It will be noticed that there is a box of blooming plants in front of the window.

Altho the box is on the street level, the plants are never molested, and they add greatly to the attractiveness of the street and to that of the window itself.

J. E. SURRATT,
Secretary, Sherman Chamber of Commerce.

A Municipal Evaporating Plant

HARTFORD, CONN.—The Hartford Chamber of Commerce, in coöperation with the city authorities, has established an evaporating plant in Hartford for the preservation of fruit and vegetables. It is being operated without expectation of profit.

In April, when it became known that the United States would enter the European war, the Hartford Chamber of Commerce appropriated $1,500 to be used in financing canning demonstrations in the public schools during the vacation period and for remodeling a night school into a modern evaporating plant. An appeal to the city resulted in an equal amount being appropriated by it for these objects. The plant has been in operation for several weeks, and large quantities of fruit and vegetables have been dried. The degree of success which has been attained warrants the conclusion that the plant has become a very positive factor in conserving the food supply of Hartford and its environs, and the Chamber of Commerce has been freely complimented upon its progressive spirit. The plant, which was designed locally, was constructed at a comparatively small expense, and its output is between two and three tons every twenty-four hours.

Every variety of fruit and vegetable can be evaporated; the general reduction in bulk is about 80 per cent. String beans, peas, corn, cabbage, beets, chard, and even potatoes, readily adapt themselves to the process. The same is true of apples, peaches, berries and other varieties of fruit.

Farmers, home gardeners and the professional gardeners, of whom there are many in and near Hartford, bring in the material, which first goes to the preparation room. There the raw product is thoroly washed by high school boys and girls, who form a volunteer army of workers. Each basket of raw product is especially prepared, and those who bring produce to the plant are assured of getting back the same material.

After the material has been prepared, it

LIBERTY BOND CAMPAIGN POSTER IN THE SHOW WINDOW OF THE SHERMAN CHAMBER OF COMMERCE

goes into the screen trays that fit into trucks. The trucks are about six feet high and four feet square. There is room for about ten trays in each truck, each tray resting on slides on top of the tray beneath. The trucks are wheeled into the kiln room, in which there are three compartments. These compartments are really kilns. They are large boxes of wood built into the floor and against the walls of the small rooms in which they stand. They are supplied with heat from below which comes from a hot-air furnace. The heat is temporarily diverted when it is necessary to enter the room. There are three dampers in each compartment for the regulation of the temperature. A blower that operates in a compartment above the kilns takes off the stale air so that fresh warm air may enter all the time and remove the moisture. The heat is maintained at about 160 degrees Fahrenheit.

After the food has been drying for several hours, the trucks containing it are wheeled into another room, where it is conditioned—that is, left there for the drying to become even. In that room the parts of the vegetables or fruit which are too dry absorb moisture from those that are not so dry. If this readjustment does not readily take place, the food is put back into the kilns and dried more thoroly. The final condition of the product is determined by experiment.

When the drying process has been completed, the food is packed in bags and piled on the shelves in another room, where it awaits its owners. They may pay for the work in cash or in evaporated food.

A drying plant has an advantage over a canning plant in that in the former two tons of produce can be taken care of every twenty-four hours. This, in the opinion of the writer, would be impossible in a cannery of the same size and employing the same number of laborers. The labor for the Hartford drying plant is secured by telephone, according to the need of the hour. When a quantity of material comes in, the laborers are summoned.

It was originally intended to make the plant essentially a home establishment, but it has been shown that its capacity is sufficient to warrant a larger use, and the Chamber of Commerce has communicated with the authorities at Washington and at Ottawa, with a view to having the United States and the Canadian governments send representatives to Hartford to purchase fruit and vegetables grown in the neighborhood to be evaporated at the Chamber of Commerce plant, the product to be transmitted across the Atlantic for use in the military camps. The charge for evaporation is 10 per cent of the raw product, which is a nominal price if the product comes prepared and ready for the kilns. If the corn has to be husked and cut from the cob, the charge is 20 per cent. The work is purely altruistic so far as the Chamber of Commerce is concerned. The toll charged is intended merely to cover in some small degree the cost of equipping and maintaining the plant.

W. L. MEAD,
Secretary, Hartford Chamber of Commerce.

Take Your Packages with You

KNOXVILLE, TENN.—The card reproduced below is being used by the retail dealers of Knoxville, who are thus giving substantial aid to the United States Government in its broad conservation policy.

A PERSONAL APPEAL TO YOU!
YOU Can "Do Your Bit"
IF YOU WILL
TAKE YOUR PACKAGES WITH YOU
As a WAR MEASURE. This will Relieve our Delivery Department and Make More Men and Additional Equipment Available for the War that is now upon us.
By Request of the Government
KNOXVILLE BOARD OF COMMERCE

THE LANCASTER "WELCOME" SIGN BY THE ROADSIDE

"Welcome" Signs

LANCASTER, PA.—The Publicity Bureau of the Lancaster Chamber of Commerce has erected "Welcome" signs on the five highways leading into Lancaster. The accompanying reproduction shows the sign located on the Lincoln Highway two miles west of Lancaster as it greets the tourist before he reaches that historic town. The reverse side of the sign reads as follows:

> **GOOD BYE!**
>
> REMEMBER
>
> **LANCASTER**
>
> **Always Welcome**
>
> CHAMBER OF COMMERCE

It is seen by all travelers leaving Lancaster by automobile. The signs on the Lincoln Highway are red, white and blue in color.

CHARLES NEWBOLD,
Secretary, Lancaster Chamber of Commerce.

New Bulletins

DOVER, N. J.—The *Bulletin* of the Dover Chamber of Commerce. To be published monthly.

JOHNSTOWN, PA.—*Community Service*, the official monthly bulletin of the Johnstown Chamber of Commerce.

PEORIA, ILL.—*Peoria Commerce*, the official monthly bulletin of the Peoria Association of Commerce.

SPRINGFIELD, MASS.—*Eastern States News*, published occasionally by the Eastern States Agricultural and Industrial Exposition, Inc.

Recently Issued Printed Matter

CLAREMORE, OKLA.—A souvenir of Claremore, Okla., illustrated with colored plates and published by the Claremore Commercial Club.

DAYTON, OHIO.—"Your City Government and You—Some Questions and Answers," is the title of a pamphlet prepared by the Citizens' Committee, a body of men of "every political faith and every walk of life, who have joined together for maintaining the present form of government (commission-manager) and its non-partisan features." Don C. Westerfield is the Secretary of the Citizens' Committee.

NEW YORK CITY.—The report of the Central Mercantile Association for the year 1916-1917 has been issued.

OKLAHOMA CITY, OKLA.—"Greater Than Athens" is the title of an illustrated booklet describing Oklahoma City, published by the Chamber of Commerce.

PETERSBURG, VA.—Bulletin No. 1 of the Petersburg Bureau of Governmental Research is entitled "Graphic Argument for City-Manager Government," and was prepared by LeRoy Hodges, Director of the Bureau.

PIQUA, OHIO.—A wall card, containing "Suggestions to Shippers," has been issued by the Piqua Chamber of Commerce in the interest of securing efficiency in transportation matters in the present great emergency.

PITTSBURGH, PA.—"Stop That Unnecessary Noise" is the title of a booklet issued by the Civic Club of Allegheny County, which is waging an active campaign in Pittsburgh in an effort to eliminate unnecessary noises.

Certain Relations of a College or University to the Engineering Divisions of Municipal Service*

By Arthur H. Blanchard, M. Am. Soc. S. E.
Professor of Highway Engineering, Columbia University, and Consulting Highway Engineer, New York City

THE opportunities of institutions with well-manned and thoroly equipped engineering departments to be of service to municipalities are many and varied. While not presupposing that the following suggestions cover the entire field of service which might be rendered, the concrete recommendations will suffice to illustrate the nature of the relationships which are practicable.

In order to be of maximum service the functional activities of the institution should comply with certain fundamental principles.

First, the institution must be administered by a president, trustees and deans sufficiently broad-minded to allow of the efficient use of its faculty and equipment in the service of municipalities.

Second, maturity, earnestness of purpose and ability to meet essential requirements should be the criterion upon which is based the utilization of the institution's facilities by members of the engineering department of a municipality and other citizens of the municipality and nearby localities who are interested in engineering work.

Third, the maintenance of a professional status which would place the rendering of consulting service by members of the engineering faculty and the conduct of laboratory tests and investigations upon the same financial basis as adopted by private practitioners.

A summary of the fields of coöperation in connection with which institutions may render service to the engineering divisions of municipalities includes the following:

1. Day and night courses covering subjects of value and interest to members of the engineering division.

2. Consulting services, by members of the faculty, to the various departments of the municipality.

3. Membership of members of the engineering faculty on public service committees and commissions, and in local associations.

4. Investigations and tests for the municipality conducted in the laboratories of the institution.

5. Series of lectures in the various branches of engineering delivered by specialists.

6. The efficient utilization of the libraries of an institution by members of the municipal service.

Night and Day Courses for Municipal Employes

In order that courses given by institutions in the interest of engineering departments of municipalities may be successful, certain fundamental principles must be recognized.

First, courses must be given for which there is a demand.

Second, the courses must be conducted by men capable of efficiently instructing municipal employes and who have a reputation and experience of such a character as will attract members of the engineering division of a municipality. For example, an instructor might successfully give a course in mechanical drawing, while, on the other hand, a professor, with extended experience in practice, should give such courses as power plant design, highway engineering, water supply, etc.

Third, courses must be given at such times and in such periods as will render practicable the taking of courses by the maximum number of municipal employes. For example, night courses should be given in periods of from two to three hours on one or two evenings per week during the late fall, winter and early spring. Day courses should be given in concentrated periods of not more than from two to three weeks in length, the lectures and laboratory work requiring, on every week day, from two to eight hours per day, depending upon the character of the course. Day courses

* Presented recently before the Society for the promotion of Engineering Education.

likewise should be given in those periods of the year in which it is practicable for municipal employes to secure leave of absence or vacations.

Fourth, the requirements for entrance on courses should be maturity, which has been defined in certain cases as graduation from high school and being over twenty-one years of age, and ability to meet the educational prerequisites of the course which the applicant desires to take.

Fifth, fees should be as low as practicable, but should cover the cost of giving the course, except in cases where public-spirited citizens, interested in the development of the maximum efficiency of municipal employes, donate funds to cover the expenses of giving such courses. In the latter case it is advisable to charge a nominal fee of from five to ten dollars, dependent upon the character and length of the course, in order to limit the attendance to students of serious purpose. Members of the faculty should be paid for giving such courses, in addition to salaries received for regular institutional instruction.

Consulting Work by Members of Faculty

Many opportunities exist in municipalities for members of the teaching staff to establish professional relationships with municipal engineering departments which will result in mutual benefit to the municipality, the institution and members of the faculty. Generally speaking, this work should be in the nature of consulting services, which may be temporary or on a yearly retaining basis. Charges for such work should be not less than for regular professional services, ranging from fifty to one hundred dollars per day.

Membership of Members of the Engineering Faculty on Public Service Committees and Commissions, and in Local Associations

In most municipalities opportunities exist for the rendering of public service, without remuneration, as members of committees or commissions appointed by the mayor or some other public official, or which may have been organized by a group of citizens interested in some form of public improvement. Also there may exist engineering associations or local bodies, such as chambers of commerce, whose work may be materially benefited by the advice of members of the engineering faculty. In the interest of the general uplift work in a community and the efficient administration of public works, membership should be accepted and, as far as practicable, enthusiastic service should be rendered. It has been the writer's experience that the plans of municipal officials and legislative bodies have been materially affected, and, in some cases, directed, by resolutions emanating from local committees and associations.

Investigations and Tests for Municipalities Conducted in the Laboratories of Institutions

A field of coöperative service exists, in connection with laboratory investigations and tests, which should be developed to the fullest extent. It is practicable, in many cases, to work out an arrangement which is efficient and economical both for the institution and the municipality. In most cities, due to the fact that investigations and tests are not called for in amounts requiring the continuous service of a laboratory, costs of investigations and tests to the municipality in all probability will be lower if done in an institution than if a laboratory were maintained and operated by the municipality. Furthermore, the municipality saves the capital investment. Based on an extended experience with this kind of work, it is believed that the following factors are essential to an amicable arrangement between the laboratory and the municipality:

First, the work must be conducted in accordance with the standards and methods adopted by the municipality.

Second, the work must not be done by inexperienced undergraduates or by seniors as thesis work, but the detailed work of investigations and tests must be handled by trained laboratory assistants under the general direction of an engineer of considerable experience in practice.

Third, the name of the institution should not appear in the transaction, but it should be made thru the medium of the engineer in charge of the laboratory. The engineer should contract, independent of the institution, for investigations and tests, should receive all fees for such work, and pay all expenses of conducting the work, including

charges by the institution for the use of the laboratory and its equipment. This arrangement is advocated because several institutions have been unfavorably brought into the public eye thru the medium of litigations in connection with which investigations and tests made in the laboratories of the institutions have been quoted.

Series of Engineering Lectures

The rendering of material educational assistance to the community may be accomplished thru the medium of lectures open to the public. These lectures may form a part of some of the regular educational programs of the institution or may be given specifically as a part of an educational campaign in the interest of the citizens of the municipality. Such lectures should be given by recognized specialists in the employ of the institution or others brought to the institution from outside sources. At first glance, the proposition to admit the public to lectures on special engineering subjects which form a part of the curriculum may be open to serious objection. After an experience of over five years in connection with this detail, the writer wishes to state emphatically that the advantages accruing from the admission of engineers and others who may be interested in the subject of the lecture far outweigh any apparent disadvantages. For example, in connection with the Graduate Course in Highway Engineering at Columbia University, from twenty to twenty-five lectures by recognized specialists were given each year. Notices of these lectures were mailed to all engineers and others in the city and nearby localities who might be interested. Attendance at such lectures was required of highway engineering students enrolled in courses in connection with which the lectures were given. At the conclusion of each lecture opportunity was given for a full discussion of the subject presented. These discussions were participated in by the highway engineering students and by engineers, chemists and others from the outside. It is obvious that the students of the institution materially benefited by the discussions of outsiders who, in many cases, were specialists on the subject. The lectures heretofore mentioned have been on subjects in special fields of engineering. From time to time, however, the institution may do valuable work by conducting a series of popular lectures on engineering subjects primarily designed to give the public information relative to the scope of each field of engineering and works of magnitude and importance which have been accomplished in each branch.

The Efficient Utilization of Engineering Libraries

The libraries of the engineering departments of an institution should be thrown open to the public under such regulations as the necessities of each department or institution dictate. An investigation of technical libraries made at the time of the establishment of the Davis Library of Highway Engineering, now maintained by the National Highways Association at Columbia University, indicated that few engineering libraries were conducted efficiently. It is admitted that, in some cases, inefficiency is due primarily to lack of sufficient funds for proper upkeep. But in many cases either practicable methods of fully utilizing the resources of a library are not known or their value is not recognized. An individual seeking information in a definite field of engineering in entering most libraries is in the position of the searcher for the proverbial needle in the haystack. In most cases he is turned loose in the Dewey classification of literature, which is not adapted to the needs of an engineering library. In the conduct of an engineering library for the use of engineering students, as well as the public, numerous classifications and indices of the contents of the library are essential. In the Davis Library of Highway Engineering, for example, it has been found that to properly place at the disposal of users the large mass of literature in the form of monographs, reports, specifications, etc., three indices are necessary, namely, an author index, a title index and a subject index. In the case of the highway engineering literature contained in eighty periodicals, currently received, a subject index has proved satisfactory. In addition to the classes of literature already mentioned and books covering engineering and related subjects, an engineering library should contain a series of files of catalogues of materials and equipment used in the branches of engineering covered by the library. In the Davis Library of Highway Engineering these files have proved of in-

estimable value to engineers, chemists and contractors. It has been the endeavor to include catalogues of all materials and equipment used in highway work which are manufactured in America, Great Britain, France and Germany. The contents of these files are made available thru two indices—one, an index of the names of the companies; the other, a subject index, consisting of a card or series of cards containing the names of all companies manufacturing a given material or piece of equipment. A library rule of procedure, which has worked out satisfactorily in the Davis Library and has proved of material assistance to users of the Library, is as follows: A newcomer is taken in charge by an assistant librarian, who explains the several indices and the methods of conducting research work in order to make maximum use of the resources of the Library. It is admitted that, in order to make an engineering library efficient along the lines indicated, the cost of upkeep will be considerable. Appropriations for the maintenance of engineering libraries are woefully inadequate, and more attention should be given to securing the financial assistance necessary to place this invaluable part of the equipment of the engineering institution on an efficient basis.

From the program of coöperation outlined, it is obvious that there are innumerable channels thru which a college or university may establish relations of value with the engineering divisions of the municipality in which it exists.

The New California State Zoning Act*

By Charles H. Cheney

Secretary, California Conference on City Planning

IN order to give our smaller unchartered cities authority and the procedure under which to zone or district themselves as Berkeley has done, the Third California Conference on City Planning went to the Legislature last January, and has secured the passage of a state-wide zoning or districting act, which will also be of great moral encouragement to our large chartered cities. The Act provides as follows:

1. For the public interest, health, comfort, convenience and welfare, the city council of any city may by ordinance divide the city into districts, limiting the use, height and bulk of improvements.

2. These districts may segregate the various classes of business and industries and determine the specific locations for apartment houses, for two-family dwellings, and for single-family dwellings.

3. Hereafter no such district shall be established by any city council until the city planning commission shall have made a report and held a public hearing.

We believe that this is one of the biggest steps in city planning progress yet made in this country, for the reason that we now have the authority of the Legislature behind us for establishing single-family residence districts, and we have had such districts already established without contest for a year in Berkeley. This Act also gives a new power definitely to the city planning commission to take up that most fundamental of all matters of city planning—the setting aside for the best use, of each portion of the city.

The eighteen planning commissions in California are acting under this authority. New ordinances have been prepared for Fresno, Palo Alto, San Rafael and Turlock, and it is expected to have these established shortly.

We anticipate that within a year there will be at least forty city planning commissions in California, and it is because of the splendid discussions and educational work of the National Conference and the men who are working so hard for better city planning in our Eastern cities that we in California have had the courage and the energy to proceed.

Above all, we look to the help, guidance and constructive thought of our attorneys. We rejoice to see them take the hopeful view. We know that we are going on new and delicate ground without a great deal of precedent, and yet we have seen Los Angeles establish several times in the United States Supreme Court the entirely new principle of zoning, which only fifteen years ago we are sure would have been thrown out of court.

* Senate Bill 430. Copies may be had of the Secretary of State, Capital Building, Sacramento, Cal.

EDITORIAL NOTE.—The foregoing article is from a paper presented at the Ninth National City Planning Conference in Kansas City, Mo.

The Conduct of a Municipal Fire Prevention Office

By B. F. Dowell

Chief Engineer, Fire Department, Portland, Ore.

FIRE prevention propaganda consists of legislation, inspection, arson investigation, and education.

To start a Fire Prevention Office, first secure an ordinance creating the office of Fire Marshal. Then select as Marshal some one who is a good officer and fireman, who has organizing and executive ability, foresight, grasp of detail, and who is morally clean. He should also be a good speaker.

Regulations should be made to cover the requirements of garages, motion picture booths, the storage of gasoline, etc. Remember that 95 per cent of fires are preventable. Lightning is about the only fire cause which is not preventable.

For inspectors choose as many men from the department as are required to cover the whole city. Have one inspector, preferably a captain, for chimneys, one for mossy roofs, one for gasoline tanks, one for theater inspection, one to condemn old buildings—and *everybody* to ferret out rubbish in basements and other places. There should be complete coöperation between the fire inspectors, the mayor and commissioners and all the other city officials. In Portland we used 120 inspectors at the start. Later the number was cut down to 41, one man from each company.

The fire escape inspector has charge of fire escapes, lights in hallways of hotels and apartments, electric gongs, inside standpipes, sprinkler systems, etc., and he is closely associated with the other inspectors in all fire prevention matters. There should be an office man familiar with the ordinances who can direct the inspectors when the Marshal is on an arson case, possibly at the court house.

The inspectors should be shown how to inspect a building thoroly. Now and then a man who doesn't know anything about fire prevention thinks that the inspector has no right to enter his dwelling, and that his house is clean and in good condition. When you find a man of this sort, find out if he has a boy; then go to the school that the child attends and give the pupils a talk. Ask how many of them know where the nearest fire alarm box is, and have them hold up their hands in reply. Ask them where their mothers keep the gasoline, and if the child of the above-mentioned man holds up his hand and says that his mother keeps the gasoline bottle on the shelf over the kitchen stove, go to the father and tell him that he is breaking the law and that one of the principles of fire prevention is the keeping of gasoline in a safe place.

Children should be educated in the principles of fire prevention thru such talks given in the schools by competent men who will teach the pupils to find out which is the nearest fire alarm box to the school and the home, and to act as fire marshals in their own families. They should be instructed to keep the basement clean and to see that mother does her glove-cleaning in the open and keeps the gasoline bottle in the yard. They should be taught to see that there is no moss on the roofs of their homes and that the chimneys are in good repair. They should watch their fathers when smoking and see that no matches are thown on the floor, under the table or into the wood box while still lighted. They should be sure that the electric iron is turned off after being used and that there is a piece of galvanized iron under the stove and a spark catcher before the fireplace. They should understand the importance of seeing that the kitchen fire is out before they leave the house and that all waste paper is removed.

Have a clean-up campaign and have the citizens and school children bring all the tin cans, iron, copper and paper to the engine houses and have the captains pay for all this waste with funds secured from some public-spirited firm. This cleans up the town. The attic—as well as the basement—is a grand place for the inspector. Get out circulars with all the "don'ts" you can think of, but don't call them "don'ts."

THE INSPECTORS OF THE PORTLAND FIRE DEPARTMENT

Transform them in this way:

"Have the rubbish taken out of your basement."

"Your kitchen should be as clean as your parlor."

"Moss-covered roofs are a menace."

Instead of saying, "Don't use wooden ash barrels," say, "Furnish yourself with a metal waste can." Educate the people to use fire extinguishers and to keep ladders and garden hose ready for an emergency.

Get one of the deputy district attorneys to come to the inspection classes and give the men instruction on how to gather evidence about arson. Take the Grand Jury out to the house which has been set on fire and show them the premises, the oil under the carpet, the boxes with excelsior soaked in oil, and take the pictures while the jury is there. This helps when the trial comes up. If there is a State Fire Marshal, it is possible to get State Fire Marshal's badges for the inspectors on the arson squad. Such badges have some standing. The inspectors do better work if they are uniformed men from the Department.

The foremen should keep outsiders away from an arson fire until the inspectors have examined the building. The Portland Department has special signal calls for the arson squad and for theater and school inspection. If there is any evidence that a fire was set, such as a bottle of coal oil, the inspector should cork up the bottle, and the Marshal should mark it with his name and the date. Then he can swear to its identity in the presence of the jury. The jury will uncork the bottle and smell the coal oil or gasoline and be convinced that the bottle was secured in the building, particularly if the owner says there was no coal oil or gasoline in the building and it is known that he is insured for about $2,000 when the building is worth only about $700.

If, during an inspection, oil-soaked papers are found, it may be noticed that the papers are dated the night before. If the owner or occupant is asked where he got the papers, and says, "I got them from a box of goods sent from New York last month," investigation may show that he bought some from a boy on the previous evening. This is a wedge, and you have "something on him."

PORTLAND FIRE PREVENTION SLOGAN USED ON LETTER HEADS

Publicity should be given to anything about fire in order to keep the people thinking on the subject. Get a slogan and use it on all letters. The one used in Portland is shown on this page. If someone is arrested for arson, it should be mentioned in the paper. If someone is arrested for running over hose, put it in the paper. If some

woman is blown up when cleaning her gloves with gasoline, put it in the paper. If anyone is arrested for not observing the exit signs, see that it goes into the paper. Have a photographer take pictures of mossy roofs, old buildings, electric irons setting fire to tables, and rubbish in basements. Have slides made showing all kinds of fires and give lectures on these pictures, emphasizing all sorts of fire dangers.

Keep the people thinking about fire prevention.

A Patriotic Duty of Every American is to

PREVENT FIRE

America at war needs every ounce of her energy and resources. It is criminal to cause hazards; it is unpatriotic to neglect them. Here are some of the ways in which you can help:

1. Learn the factory safety rules and observe them.
2. If you discover a fire, give the alarm promptly. Do you know how to do this? Ask to be shown.
3. **Don't smoke** where it is not permitted.
4. Never drop a lighted match, cigar or cigarette; be sure that it has no spark left before throwing it away.
5. Report suspicious strangers seen about the plant.
6. If you notice any unusual smoke, the overheating of any machine, or any other accident, notify the foreman at once.
7. Carry your precautions into your own home; keep your house and yard free from rubbish, and help others to do the same.

Where would **your** job be if this plant should burn?

Help Uncle Sam

BE CAREFUL

FIRE PREVENTION POSTER FOR USE IN FACTORIES, APPROVED BY THE NATIONAL BOARD OF FIRE UNDERWRITERS AND THE COUNCIL OF NATIONAL DEFENSE

Copies may be secured thru THE AMERICAN CITY

Replanning a Great Hotel to Meet New Building Laws

WITHIN the last few months there has been developed in New York City a new hotel proposition which presents an excellent example of the working of the new building laws, and also embodies a novel method of financing. As originally designed, this new Hotel Commonwealth was to stand twenty-eight stories high and occupy an entire city block front. The architect's drawing reproduced below at the left shows the result, a building somewhat similar to the many lofty structures already built in New York.

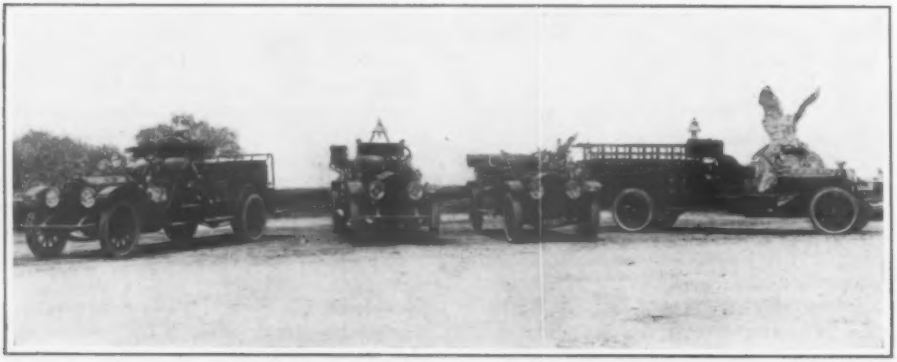
The present building law, passed after the first set of plans had been drawn for the new hotel, states that the buildings in the district immediately north of Broadway and Forty-second Street shall not be more than twice the street width in height at the street line. It is in this district that the hotel will probably be located. The building law makes the proviso that the height of the building may be increased above this allowed limit by setting back the upper portion to meet a line running from the center of the street thru the limiting height at the street line. The result of replanning the hotel to meet this requirement, which permits ample light and air for the entire façade and surrounding buildings, is shown in the right-hand illustration below. Not only does the new façade comply with the building regulations, but in general it presents a more artistic effect than the straight block appearance of the original.

The rather unique method of financing this great project is of interest. The stock is sold thruout the country in blocks of not more than ten shares at $100 a share. The purpose of this method is to secure a widely scattered share-holding body which will, thru personal interest, patronize the hotel when in New York.

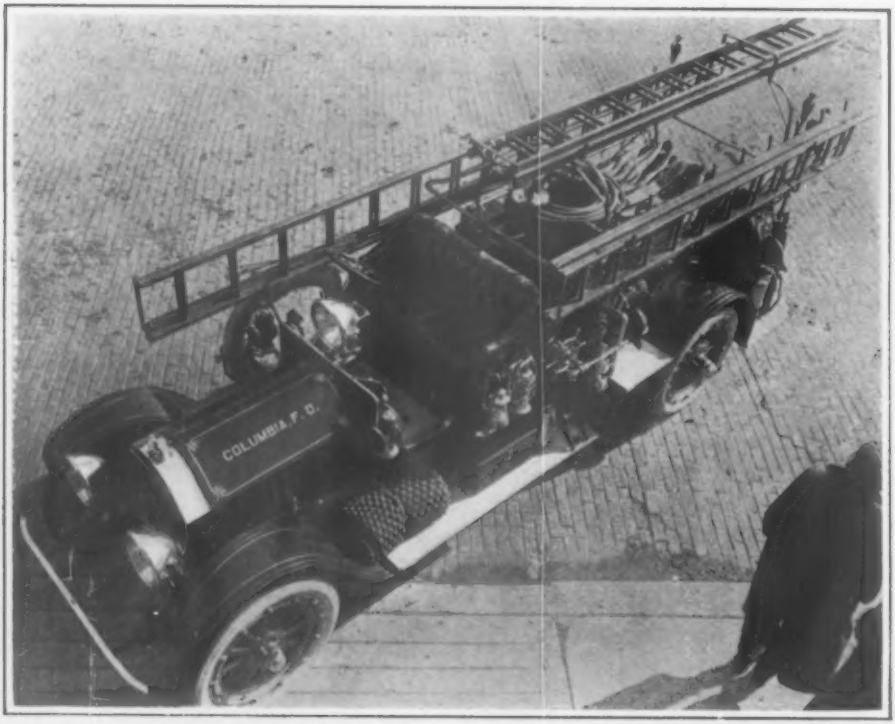
THE ORIGINAL PLAN FOR THE HOTEL COMMONWEALTH

THE HOTEL REPLANNED TO MEET THE NEW BUILDING LAW

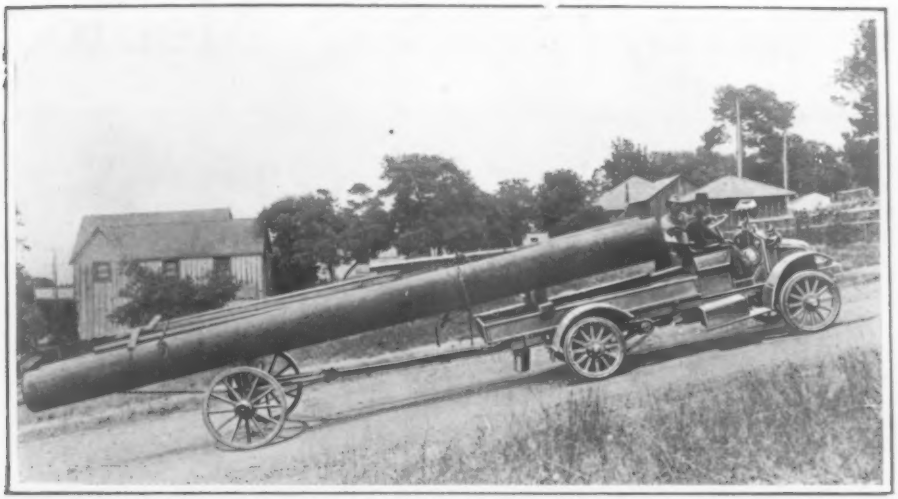
Motor Apparatus Performs Many Kinds of Municipal Service



WHITE FIRE APPARATUS IN MANILA, P. I.



ANDERSON FIRE TRUCK USED IN COLUMBIA, MO.



KELLY-SPRINGFIELD TRUCK DOING STEEP-GRADE WORK FOR THE MONTEREY WATER-WORKS, PACIFIC GROVE, CAL.

MOTOR TRUCK EQUIPPED AS SNOW PLOW FOR USE ON PHILADELPHIA STREETS

From twenty to thirty 5-ton White motor trucks operate in fleet formation and sweep the streets clean. The plows, which are 10 feet long and 16 inches high, are operated by a steering wheel similar to the steering wheel on the truck, and are adjustable to any kind of pavement or road. The driver can raise or lower the blade when crossing street car tracks or manholes, and may also set it at any desired angle. In cleaning Broad Street, which is the leading thorofare and 13 miles long, the trucks travel together, one being just far enough behind another to enable the plow blades to remove all the snow covered by the width of the trucks.

Modern Lighting Methods

THE OLD WAY

Two sets of poles.

Tubular steel for supporting trolley wires.

Cast iron standards for lighting.

DOUBLE EXPENSE

Unnecessary obstruction along the curb line.

Underground wiring absolutely necessary.

Difficulty of keeping both sets of poles in alignment.

THE ELRECO WAY

One set of Elreco combination poles.

The addition of ornamental bracket and base transforms the ordinary plain trolley pole into a handsome lighting standard.

"White Way" is obtained at less than one-half the cost of a separate installation.

Lighting wires may be attached to top of poles—saving all expensive underground construction.

Curb line free from all unnecessary obstruction.

Get full details and catalog

Electric Railway Equipment Co.

Manufacturers **Cincinnati, Ohio**

NEW YORK OFFICE **30 CHURCH STREET**

Industrial Recreation

A Recent Phase in the Playground Movement

By O. W. Douglas

DURING recent years many of the larger industrial concerns have given a great deal of their very best thought and effort to the subjects of safety, sanitation and welfare in connection with their employes and their children. This has often broadened into general community welfare work. In this connection special attention has been given to recreation of various kinds for the employes and to the establishment of playgrounds for children of the employes and of those living in the neighborhood of the respective plants.

The United States Steel Corporation, with its many subsidiaries, has done notable work along these lines. Considerable has been done also by operators of various mines, cotton mills, automobile factories, etc. As yet, however, the movement is only in its infancy, and the next decade will undoubtedly show remarkable results.

The writer has had an opportunity to observe a large number of recreation grounds developed by industrial corporations, and has been greatly impressed with the preparations made and results obtained by the Goodyear Tire & Rubber Company, of Akron, Ohio.

In order to understand more fully the value of results obtained, a brief statement of conditions in Akron may not be out of place.

It is a well-known fact that Akron is the greatest center in the world for the production of rubber goods, especially automobile tires. The development of this industry in connection with the growth of the automobile business has been truly phenomenal. Akron has grown from a population of about 27,000 in 1890, and 70,000 in 1910, to approximately 140,000 in 1917. While this growth has been due very largely

THE INDUSTRIAL PLAYGROUND FOR AKRON CHILDREN

PACKARD TRUCKS

Full time—full loads! Unfailing service clinches Packard savings.

Reliability and economy are prime essentials in equipment used for municipal service.

The city's work must be carried on without halt, or citizens suffer. And the equipment so often is of special type that no substitute can be hired.

Packard silent, chainless trucks, therefore, are the choice of municipalities which put every-day efficiency and low final cost above consideration of initial investment.

This 6-6½ ton street flusher and sprinkler recently purchased for the Highway Department of the City of Denver, for example.

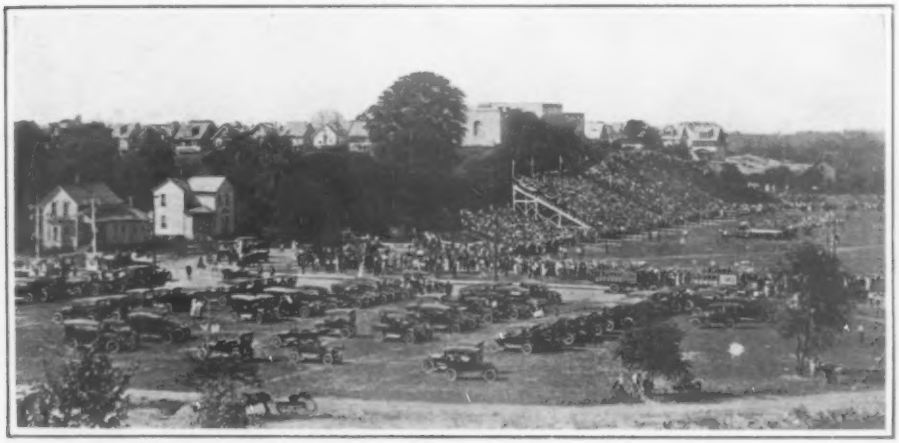
"It gives me pleasure to say that the Highway Department is very greatly pleased with its truck," writes Commissioner Fred W. Bailey.

Four-speed, silent, chainless Packards are built in seven *economical* sizes by Packard Motor Car Company, Detroit. *Ask the man who owns one.*

Packard

to the rubber industry, Akron has a number of substantial concerns in other lines.

Because of such phenomenal growth, transportation, housing conditions, school buildings, boulevards, parks, playgrounds and other essentials, have been utterly unable to keep pace. Akron, therefore, presents a fine example of over-growth and congestion. Recognizing these conditions as unsatisfactory, the management of the Goodyear Company saw the necessity for providing recreational facilities on an independent basis. The company employs about 16,000 people in the various departments. The daily shifts of workmen are so arranged that it is possible for a large number of employes to have an opportunity for play during practically all hours of the day. Many of the employes have families and live near the factory, and they and their children have been well provided for in the recreational plans.



A PANORAMA OF THE FIFTY-ACRE INDUSTRIAL RECREATION AREA IN AKRON

About fifty acres of land owned by the company are dedicated solely to the purposes of play. This land is admirably situated in a valley, and a large hill or bluff serves as a natural amphitheater. Another elevation serves as an ideal spot for coasting and skiing.

For the children, complete playground equipment is provided, including many coaster or wave slides, seesaws, ocean waves, swings, giant strides, traveling rings, horizontal bars, ladders, etc. This children's playground is arranged in a beautiful shady grove and is supplied with "Fun-Ful" equipment, manufactured by the Hill-Standard Co., of Anderson, Ind.

Besides using the apparatus, the children engage in folk dancing, playground ball, wading, and various children's games. For the folk dancing and many other games the large dancing floor, provided primarily for adults, is utilized during the day by the children. Sand boxes and baby swings are also provided for the little tots.

For the larger children and adults first-class facilities are provided for baseball, football, track athletics, hockey, skating, basket-ball, volley ball, tennis, cricket, coasting, skiing and dancing. The grand stand and bleachers in connection with the baseball ground have a seating capacity of 9,000. Three thousand removable seats are supplied, which are shifted to other parts of the grounds as occasion demands. Not only are Goodyear Leagues maintained, especially in baseball, basket-ball, football and track athletics, but there is also a City Industrial League in which athletic teams from the various factories engage in friendly rivalry.

All of these activities are under competent supervision. A thoroughly trained physical director is in charge. He has three assistants, one male and two female, all trained and experienced. In addition, there is a superintendent of grounds always on the premises. One of the recent and most satisfactory innovations is that of

Stamina!

ABILITY to stand up under the most gruelling tasks—under the most severe strains, has made the Garford name a by-word across the nation.

Garford *stamina* coupled with Garford power is winning battles against tremendous odds.

Here's a Garford for instance that conquered 150 miles of the poorest going on the continent.

It carried a full two-ton load from Los Angeles to Bear Lake, California, thousands of feet up in the mountain wilderness.

It never whimpered—never faltered. It conquered—thanks to Garford *stamina*.

And Garford *stamina* will conquer for you,—no matter what kind of hauling you do.

Let Garford stamina serve *you*—and make money for *you*. Write Dept. 203 for particulars.

Garford MOTOR TRUCKS

The Garford Motor Truck Company, Lima, Ohio

Manufacturers of Motor Trucks of 1, 1½, 2, 3½, 5 and 6 ton capacity
4½, 7 and 10 ton Tractors
The Garford Road Builder
Distributors and Service Stations in all Large Cities

When writing to Advertisers please mention THE AMERICAN CITY.

A GROUP OF CHILDREN WHO FREQUENT THE RECREATION AREA

community singing, in which hundreds engage under a competent leader.

It requires no stretch of imagination to picture the work of employes as being more efficient because of such opportunities as are afforded by Goodyear Field. The workers are healthier in mind and body, they always have something to look forward to after their arduous daily duties, and those who have families are proud that they are permitted to have such privileges. There is, therefore, a physical and mental reaction in their daily work that cannot help but be profitable in dollars and cents to the company. This, however, is only the material side of the question. Great satisfaction is experienced on the part of the Goodyear officials in the knowledge that they are doing a distinct service for their employes and the community.

Methods and Materials for Paving Between Street Railway Tracks

Fourth Article—The Practice in Dayton, Ohio

By F. O. Eichelberger
City Engineer

THE several street railway companies operating in the city of Dayton are compelled by franchise provision to pay the cost of that part of all street improvements lying within and 18 inches beyond the outer rails of their tracks. The amount so determined is assessed against the railway company or companies operating on the street to be improved with the privilege of paying the assessment in cash within a period of twenty days following the passage of the assessment ordinance, or at their option in ten annual installments with interest on the deferred payments at the rate of five per cent per annum.

The franchises of the various companies further provide that the pavement lying within the boundaries above mentioned shall be maintained by those companies operating on the street in question.

GMC
GENERAL MOTORS COMPANY
TRUCKS

GMC Trucks With Standard Fire Equipment

The strength and stamina that have backed GMC Trucks in years of constant performance are now available for fire duty—*where dependability is first requisite.*

Fully equipped with body for 1000 feet of hose, ladders, chemical tank and hose, alarm bell, lanterns, torches, ax, hand-extinguishers, etc., this GMC Truck accurately meets the needs of small or large city—at less expense.

The reliability for which the General Motors Company's name stands is assurance it is right in construction and performance. Write for specifications and figures.

GENERAL MOTORS TRUCK CO.
One of the Units of the General Motors Company
PONTIAC, MICHIGAN (253)

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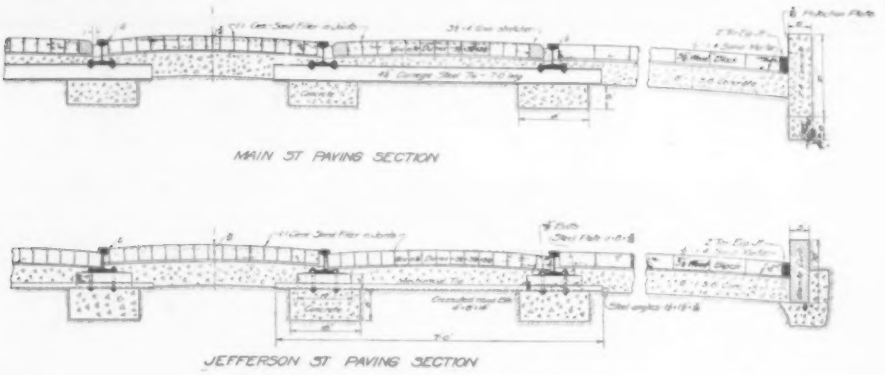


TYPICAL PAVING SECTIONS, DAYTON, OHIO

The general practice followed locally is for the city to let the contract for the paving of the street, at a unit price per square yard for the entire surface of the street, which unit price is for pavement complete, including excavation to the bottom of the 6-inch concrete base. Any excavation required below this point is taken care of by the railway company, either by a separate price agreement with the contractor or by direct labor.

Since the cost of both installation and maintenance of the pavement is borne by the railway companies, they are permitted to a large extent to use that method of track construction which they feel best suited to their particular needs. The methods, therefore, are not standardized, but the policy of the local companies has been to build their tracks as substantially as in their opinion will reduce the maintenance costs to a minimum without unwarranted expense.

Some of Dayton's main thorofares were repaved recently and several different types of construction were used in rebuilding the street railway tracks preparatory to paving.

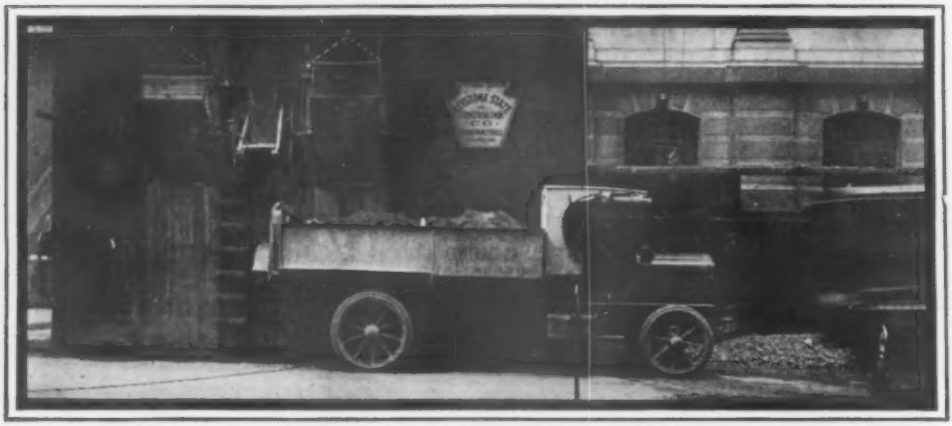
On Main Street, the 7-inch 90-pound T rails were used with the Carnegie Steel ties laid in 6-inch slab of 1:2½:5 concrete. A concrete beam 18 inches wide and 6 inches in depth of the same class was poured under the rails. The area within the tracks was paved with granite Durax, while the portion outside the tracks was laid with creosoted wood block, so as to conform to the material used on the balance of shoulders. Granite blocks about 4 inches square and 8 to 10 inches long, with the one edge chamfered, were laid as stretchers adjacent to the inside of the rails to form the groove for the flanges of the wheels. With the steel tie construction, three weeks were allowed for thoro setting of the concrete before the cars were permitted to resume operation.

On the Fifth Street repaving work, three of the five blocks of tracks were built after the same manner as Main Street; on the remainder the tracks were laid on wood ties, tamped up on broken stone.

The particular reason for wood tie construction in this instance was the fact the operation of the street cars had to be maintained over both tracks during reconstruc-

LAYING A GRANITE DURAX PAVEMENT IN DAYTON

WHITE TRUCKS



One of a Fleet of White Trucks Hauling Excavated Material in Philadelphia Subway Work

FINISHING A FORFEITED SUBWAY CONTRACT

A SERIOUS transportation problem confronted the Keystone State Construction Company of Philadelphia, Pa., soon after starting work on the city's $65,000,000 subway. For a time inadequate hauling equipment threatened to halt the work.

Earth, rock and shale were excavated from the tunnel under the City Hall building in the heart of the most congested business district, and were hauled to a dumping ground five miles distant.

Two hauling contractors forfeited their contracts when their motor trucks proved incapable of the constant, severe service which this contract demanded.

The Construction Company then contracted with Stedman Bent to use his fleet of White 5-ton dumping trucks. These trucks proved very satisfactory, hauling the excavated material from five different loading bins located on the City Hall property, and completed the first section of the job in record time.

While one part of the White Fleet was hauling earth and rock, another was engaged in transporting cement, sand, gravel, crushed stone, lumber, tools and other supplies.

White Trucks cost more to purchase, but they can be relied upon to give uninterrupted service for the longest period at the lowest cost.

THE WHITE COMPANY
CLEVELAND

Largest Manufacturers of Commercial Motor Vehicles in America

NEW TYPE OF TIE MADE OF STEEL CHANNELS AND WOOD BLOCKS, IN USE IN DAYTON

tion. This was done by replacing half of the old ties and laying new rails just next to the old ones; the old track was then removed with the remainder of the old ties, the new rail moved over into place, and the remainder of the new ties inserted. The change was made in a few minutes and without holding up traffic.

One block of track on Fourth Street was rebuilt on wood ties surrounded by concrete, similar to the Baltimore method. This track carries heavy interurban cars, and the company operating the cars has adopted this method of construction as their standard.

The area within and 18 inches outside the rails was paved with Durax. The pavement was brought down under the ball of the rail, thus eliminating the necessity of the chamfered stretcher block to form the groove for the flanges of the wheels. This method of pavement has proved very satisfactory and has been adopted for the tracks on Jefferson Street and Third Street, which are being paved this year.

A new type of tie is being tried out on Jefferson Street. It consists of two treated wood blocks on top of which are steel plates. The blocks are held in place by two angle bars which are bolted to the bottom of the blocks; the same bolts extend thru the plates on top of the blocks and serve to hold the rail fast to the tie. In one illustration the men are shown holding a double tie used under the rail joints; the intermediate ties are single.

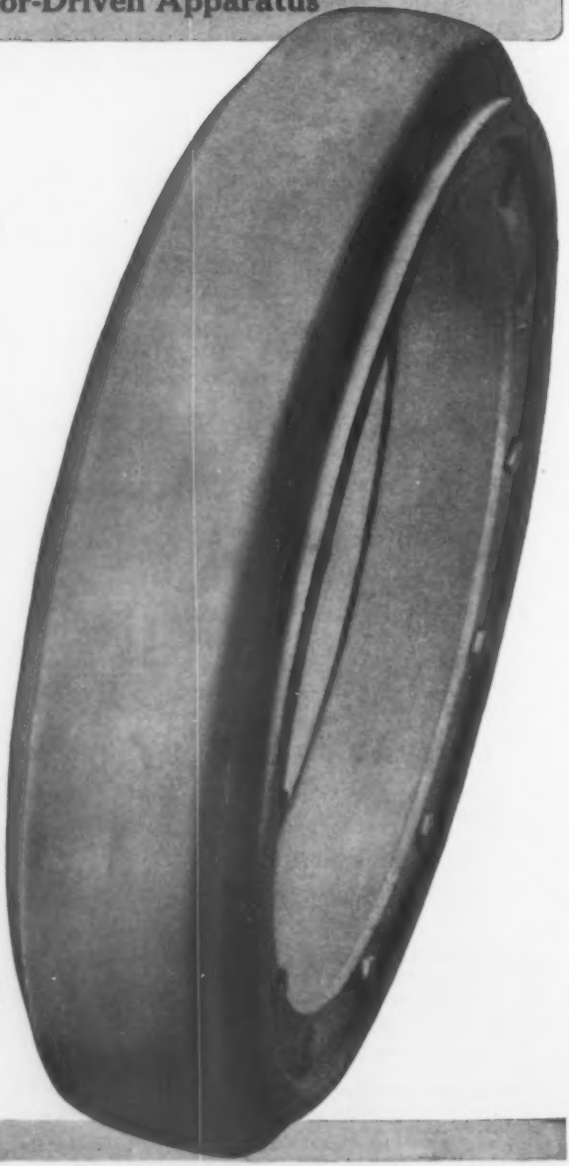
After the ties are placed and the rails bolted, the track is lined and graded and the concrete poured around the ties in conformity with the cross section as shown. An experimental section of this type of construction was built in July, 1915, on Wyoming Street. The track carries heavy interurban cars and has proved satisfactory in all respects during the two years in which it has been in service.

The previous articles in this series have discussed the practice in Philadelphia, Pa.; Baltimore, Md.; St. Louis, Mo., and Cambridge, Mass. Articles will be published from New Orleans, La., Ottawa, Canada, and Seattle, Wash.

Firestone

PNEUMATIC OR SOLID TIRES

For Horse or Motor-Driven Apparatus



First Place in the Fire Department World

FIRESTONE TIRES are used almost universally in fire service. Their dependability and ability to get there has made them the choice of Fire Departments everywhere.

Firestone Pneumatic or Solid Tires are built to fulfill every vehicle requirement. Their toughness endures the grind, the strain and the heat of high speed under heavy loads. Their resilience reduces vibration.

Firestone Tires stand for long life and the economy of Most Miles per Dollar.

See the nearest Firestone man; he is ready to serve.

FIRESTONE TIRE AND RUBBER COMPANY
Akron, Ohio Branches and Dealers Everywhere

The Natural Purification of Water by Freezing

By H. A. Whittaker

Director, Division of Sanitation, Minnesota State Board of Health

FOR a number of years the Minnesota State Board of Health undertook sanitary investigations of ice supplies as a routine procedure. These studies, which included field surveys and analytical results, have failed to demonstrate that ice is an important factor in the spread of communicable diseases. No epidemics of these diseases caused by pollution in ice have been discovered in Minnesota up to the present time. This same view is taken by other sanitary authorities who have studied the problem. Investigations have shown that the danger from ice lies more in the way it is handled during its distribution to the consumer and by the consumer than in the ice itself, provided certain rules are observed in harvesting the supply.

The purification which takes place in water during the process of freezing is well illustrated in Table I. This table represents average results on seven samples of water and ice collected simultaneously from the same sources at seven different localities in Minnesota. The ice samples were clear, solid ice, that would be considered satisfactory for public consumption. The ice was taken from points where the water was at least three feet in depth under the ice at the time of collection. The bacteriological, physical and chemical examinations represent the ordinary standard tests applied to determine the sanitary quality of water for drinking purposes.

TABLE I

Effect of Freezing on Water. Bacteriological, Physical, and Chemical Results

	Bacteriological			Physical			Chemical								
	Bact. per cc	B. coli. 1cc	B. coli. 100cc	Turb.	Col.	Odor	Total Hard.	Alk.	Inc.	Alb NH_3	Free NH_3	NO_2	NO_3	Cl.	Fe.
Water	16000	+	+	13	42	v-2	173	182	8	.699	.286	.008	0.26	5.8	0.7
Ice	5	0	0	4	11	v-1	16	15	4	.497	.122	.003	.032	2.0	0

The bacteriological results on the water samples from these sources show marked indications of pollution, as represented by high bacterial counts and the presence of B. coli, while the ice samples show exceedingly low bacterial counts and the absence of B. coli, indicating ice of good sanitary quality. The physical results show a marked reduction in the inorganic substances and a partial removal of the nitrogen constituents. These results are typical of numerous analyses on record, showing the purification of water which takes place on freezing.

TABLE II.

Soft and Solid Ice, Bacteriological Results.

Soft and Cloudy Ice 1 to 3 In. From Surface of Cake.	Clear and Solid Ice Near Center of the Cake.
Bacteria per c. c.	Bacteria per c. c.
Sample No. 1 70	6
Sample No. 2 2600	48
Sample No. 3 1750	46
Sample No. 4 3000	5

Table II includes a few results which show an inferior quality of soft, cloudy ice, as compared with clear, solid ice.

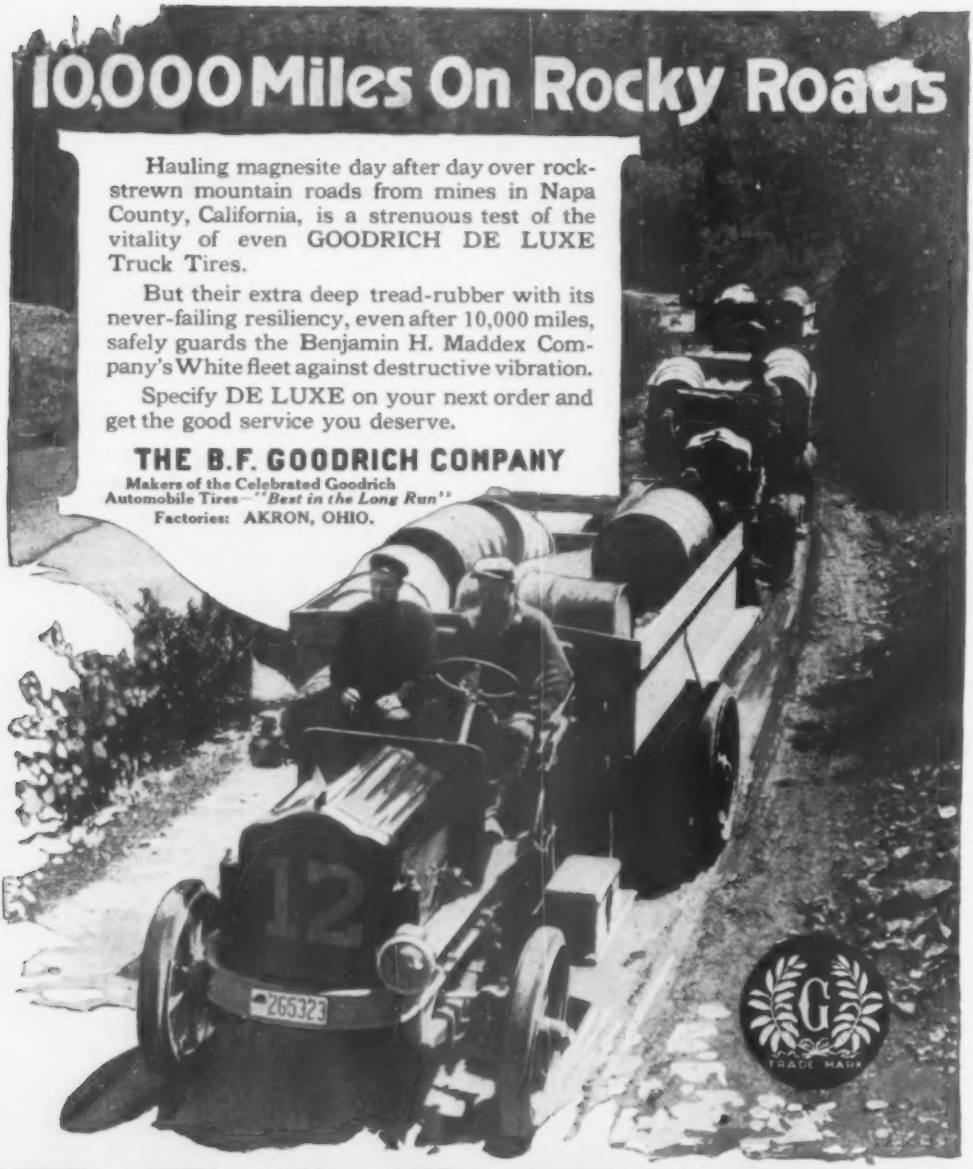
The first column represents soft, cloudy ice, collected near the surface of the cake, while the second represents clear, solid ice near the center of the same cake. These results show the need of thoro removing soft, cloudy ice from the surface of the cake before the ice is stored or distributed for public consumption.

The Minnesota State Board of Health considers an ice supply safe for public consumption provided it is harvested in the following manner:

1. Bodies of water as free as possible from pollution should be selected for the ice field.

2. The water under the ice at the time of harvesting should be at least three feet deep and free from suspended material of any description.

3. Ice fields should not be selected at locations where the surface of the ice may be flooded with polluted material which will subsequently become frozen and form a portion of the cake.


10,000 Miles On Rocky Roads
Hauling magnesite day after day over rock-strewn mountain roads from mines in Napa County, California, is a strenuous test of the vitality of even GOODRICH DE LUXE Truck Tires.
But their extra deep tread-rubber with its never-failing resiliency, even after 10,000 miles, safely guards the Benjamin H. Maddex Company's White fleet against destructive vibration.
Specify DE LUXE on your next order and get the good service you deserve.
THE B.F. GOODRICH COMPANY
Makers of the Celebrated Goodrich Automobile Tires—"Best in the Long Run"
Factories: AKRON, OHIO.
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266323
TRADE MARK

GOODRICH
TRUCK TIRES

4. The ice should be clear and free from visible foreign material.

5. [illegible]e storing, the surface of the ice should be scraped free from snow, soft ice and foreign material.

6. Special care should be taken during the cutting to exclude any ice polluted by human or animal excreta.

The Minnesota State Board of Health feels that these are facts the determination of which does not require expert technical advice; therefore, it does not feel that it is necessary under ordinary conditions to send representatives into the field to make such investigations.

Editorial Note.—The above paper has been reprinted in leaflet form, from *Minnesota Municipalities*, by the Division of Sanitation of the Minnesota State Board of Health.

Current from Electric Runabout Thaws Frozen Water Pipes

By P. Barnhard

Manager, Mt. Carmel (Ill.) Utility and Service Company

THE use of electric current to rapidly and safely thaw out frozen water mains and service pipes has become relatively common. Many cities have elaborate outfits of generators, transformers and other necessary apparatus mounted on motor trucks. This equipment is expensive and unless the call for its services is great the expense is unwarranted, and small towns and water companies cannot afford the equipment.

As an emergency outfit the Mt. Carmel Utility and Service Company made use of the electric runabout owned by the company to provide the necessary current during a spell of very cold weather last winter. There were many complaints from residences that the service pipes were frozen and needed immediate attention. The electric runabout used by the manager of the company has a 32-cell Exide battery. This car was run up to the residence where trouble had been reported, and after the necessary connections were made a current of about 75 amperes was applied at 60 volts, and almost invariably within ten minutes the water began to run. In no case did this treatment fail, and it was possible to attend to as many as fifty frozen connections a day during the emergency. A nominal charge of $2 was made for each connection thawed, and it was done so quickly and thoroly that no complaints were made as to the expense.

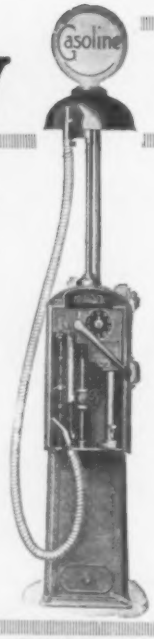
When the success of this method of thawing pipes was assured we felt that we had made a valuable discovery, but still there was a little apprehension that it might prove bad for the batteries. The matter was taken up with the manufacturers of the runabout, who advised that it would probably cause a buckling of the positive plates and render them unfit for service. No damage was noticed on our car, but, inasmuch as the manufacturers do not advise it, we would recommend that their use be restricted to cases of emergency which, not occurring often, would not place a continuous strain on the batteries.

An Adaptable Post Design Used in Washington, D. C.

The post design which is shown on page 379 in a number of different arrangements for street use was executed in the Electrical Department of the office of the Engineer Commissioner of the District of Columbia, and has proved very satisfactory. The design is adaptable for supporting fire alarm or patrol boxes and for a straight lamp post with various styles of lanterns and tops. The base is common to all the different arrangements, so that the combinations are interchangeable.

The side views of the posts carrying the fire alarm and police patrol boxes show two boxes set back to back. One of these is used for the signaling mechanism; the other, which is accessible only to employes of the Electrical Department, is used for the cable terminal connections and for testing purposes.

Public Safety



Improper storage of gasoline remains a constant menace to public welfare; is also an extravagance that tends away from conservation of resources by continuing useless waste.

Gasoline stored as it should be becomes a most useful servant; is rendered harmless to life, property and business; economy takes the place of waste.

Modern storage facilities combined in the Bowser

Oil and Gasoline Storage System

Will usher in a new regime in this respect.

Gasoline is stored underground, where it is protected from evaporation, deterioration, fire, explosion and indiscriminate handling; retains its full value and bulk. Pump is tamper-proof—it locks.

Write for full information

BOWSER
ESTABLISHED 1885

The Shield of Protection

S. F. Bowser & Co., Inc., Fort Wayne, Ind., U. S. A.
Sales Offices Representatives In All Centers Everywhere

DUPLEX

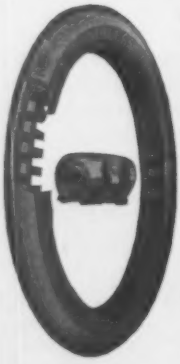
4-WHEEL DRIVE TRUCK

The Duplex has the strength, the irresistible power and endurance to perform efficiently the most severe haulage tasks.

Let us send you data showing how profitably the Duplex is solving haulage problems. Address all communications to Dept. 136.

DUPLEX TRUCK COMPANY
Lansing, Michigan

Dayton Airless Fire Equipment Tires



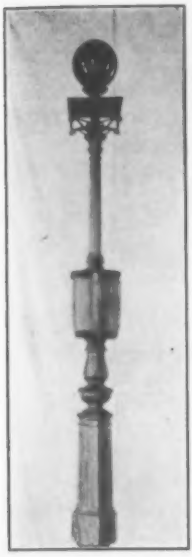
are safe and easy-riding at any

SPEED

They are always reliable and long service makes them economical. That's why they dominate the field in motorized fire equipment.

Write for booklet.

The Dayton Rubber Mfg. Co.
DAYTON, O., U. S. A.



Side view of police patrol post

With ball globe and street signs

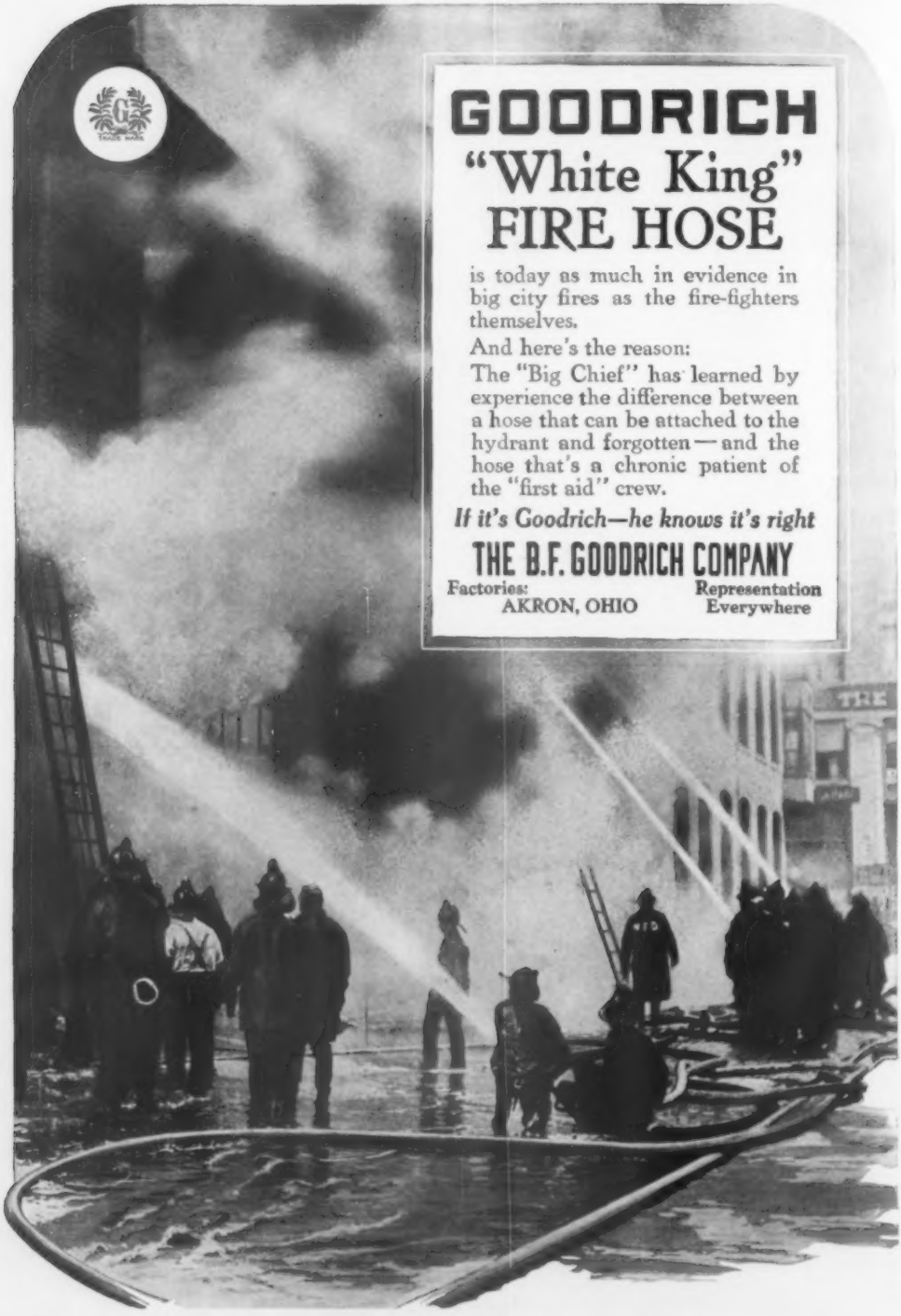
With ball globe and ventilating cap

Fire alarm post with gas lanterns

Police patrol post with green globe and street signs

Plain post, with square street-sign lantern

POSTS USED ON THE STREETS OF WASHINGTON, D. C.


GOODRICH
"White King"
FIRE HOSE
is today as much in evidence in big city fires as the fire-fighters themselves.
And here's the reason:
The "Big Chief" has learned by experience the difference between a hose that can be attached to the hydrant and forgotten — and the hose that's a chronic patient of the "first aid" crew.
If it's Goodrich—he knows it's right
THE B.F. GOODRICH COMPANY
Factories:
AKRON, OHIO
Representation
Everywhere

Conventions and Exhibitions

On the Calendar

OCTOBER 10.—DUNCAN, B. C.
Union of British Columbia Municipalities. Annual convention. Secretary, Ex-Reeve H. Bose, Surrey Center, B. C.

OCTOBER 12-13.—WENATCHEE, WASH.
Washington Association of Commercial Organizations. Annual convention. Secretary, P. E. Magruder, Chamber of Commerce, Bellingham, Wash.

OCTOBER 15-17.—RICHMOND, VA.
American Association for Study and Prevention of Infant Mortality. Annual meeting. Executive Secretary, Miss Gertrude B. Knipp, 1211 Cathedral Street, Baltimore, Md.

OCTOBER 15-17.—CHICAGO, ILL.
National Housing Association. Annual meeting. Secretary, Lawrence Veiller, 105 East Twenty-second Street, New York City.

OCTOBER 15-17.—NEW YORK CITY.
Southern Commercial Congress. Annual convention. Managing Director, Clarence J. Owens, Southern Building, Washington, D. C.

OCTOBER 16-19.—WICHITA, KAN.
League of Kansas Municipalities. Annual convention. Secretary, C. H. Talbot, University of Kansas, Lawrence, Kan.

OCTOBER 17-18.—ST. CLOUD, MINN.
League of Minnesota Municipalities. Annual convention. Executive Secretary, E. L. Bennett, University of Minnesota, Minneapolis, Minn.

OCTOBER 17-20.—WASHINGTON, D. C.
American Public Health Association. War meeting to replace the annual meeting. Acting Secretary, A. W. Hedrich, 126 Massachusetts Avenue, Boston, Mass.

OCTOBER 17-24.—ADELAIDE, AUSTRALIA.
Australian Town Planning Conference and Exhibition. Organizing director, Charles C. Reade, Government Town Planner, Education Buildings, Adelaide, South Australia.

OCTOBER 18.—HARTFORD, CONN.
Connecticut Chamber of Commerce. Annual convention. Secretary, A. H. Andrews, Board of Trade, New Bedford, Mass.

OCTOBER 22-24.—ST. LOUIS, MO.
American Civic Association. Annual convention. Secretary, Richard B. Watrous, 914 Union Trust Building, Washington, D. C.

NOVEMBER 13.—ATLANTA, GA.
National Tax Association. Annual conference. Secretary, Fred R. Fairchild, Yale University, New Haven, Conn.

NOVEMBER 14-16.—NEW ORLEANS, LA.
Fire Marshals' Association of North America. Annual convention. Secretary, W. M. Campbell, New Orleans, La.

NOVEMBER 15-16.—PITTSBURGH, PA.
Association of Urban Universities. Annual meeting. Secretary, Frederick B. Robinson, College of The City of New York, New York City.

NOVEMBER 19-24.—DETROIT, MICH.
City Managers' Association. Annual convention. Secretary, Winton L. Miller, City Manager, St. Augustine, Fla.

NOVEMBER 21-24.—DETROIT, MICH.
National Municipal League. Annual meeting. Secretary, Clinton Rogers Woodruff, North American Building, Philadelphia, Pa.

JANUARY 3-4.—TRENTON, N. J.
New Jersey State League of Municipalities. Annual convention. Secretary, Clinton J. Swartz, Trenton, N. J.

Chicago Convention, N. A. C. O. S.

Nearly three hundred members and guests registered at the Chicago convention of the National Association of Commercial Organization Secretaries, September 24-26.

The program was carried out substantially as outlined in THE AMERICAN CITY for September. Added features were addresses on the relation of commercial organizations to war-time problems, by Harry A. Wheeler, past president, and Elliot H. Goodwin, secretary of the National Chamber; and a presentation of the objects and needs of the War-Camp Community Recreation Service, by George A. Bellamy, of Cleveland, representing Raymond B. Fosdick, Chairman of the War Department Commission on Training Camp Activities.

The annual election resulted in the choice of the following directors:

Fred Clayton Butler, Tonawanda, N. Y. (Secretary and Treasurer.)
Gordon C. Corbaley, Seattle, Wash.
Willis Evans, Peoria, Ill.
George E. Foss, Springfield, Mass.
J. M. Guild, Dayton, Ohio. (First Vice-President.)
J. P. Hardy, Fargo, N. D.
William Kennedy, New Castle, Pa. (Second Vice-President.)
Howard Strong, Minneapolis, Minn. (President.)
John M. Tuther, Memphis, Tenn.

✣ ✣

National Housing Conference

The Sixth National Conference on Housing in America will take place in Chicago, October 15, 16 and 17, at the Hotel La Salle, under the auspices of the National Housing Association.

Discussion will center on the various problems of industrial housing and the housing of the new army in the cities which Uncle Sam is building.

One of the valuable contributions will be a paper by William H. Ham, manager of the Bridgeport Housing Company, who will tell how Bridgeport, Conn., which practically doubled its population in a year's time, grappled with its housing problem.

One of the conference sessions will be devoted to the subject of districting and zoning, and another session will be taken up entirely with the consideration of Chicago's specific problems.

It is easy to guess the Fire Committee's unanimous choice of Motor Apparatus

In deciding between different makes of Motor Fire Apparatus, a fire committee is apt to run up against what seem to be many perplexing problems; but there are certain fundamentals in judging Motor Apparatus which should be seized upon and kept continually in sight. These are:

COST—Which is determined, not by price, but by Length of Service, Efficiency and Dependability of Apparatus.

EXPERIENCE—The Advent of Motor Fire Apparatus being comparatively recent, it follows that the concern having the most extensive experience in this field has logically gravitated into the most commanding position.

INSPECTION, REPAIRS and REPLACEMENTS — The manufacturers must maintain a system of inspection of every piece of their apparatus. Parts for replacement must be carried at Service Stations ready for immediate shipment.

DESIGN—Which is the result of a complete knowledge of what is required of Motor Apparatus in fire duty.

MATERIALS and WORKMANSHIP—The manufacturers must absolutely control the Quality of Materials and Workmanship of vital parts by manufacturing them themselves. They must not, in fire service, depend upon assembled parts.

RECORD OF APPARATUS IN SERVICE—The manufacturers must demonstrate, by record of apparatus in use, the ability of its apparatus to withstand Severe Service under all conditions.

These things are a part and parcel of American-La France policy. They are the Fundamentals—the SUBSTANCE—of the whole Motor Fire Apparatus question. The fire committee that holds fast to them will not be debating *Shadows* while the *Substance* gets away from it.

AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

Members of the National Automobile Chamber of Commerce.
Licensed under the Dyer Patents

Elmira, New York, U. S. A.

Branch Sales Offices and Service Stations

New York Boston Chicago San Francisco Portland, Ore. Dallas Los Angeles Atlanta Denver Pittsburgh Baltimore Minneapolis

CANADIAN FACTORY, TORONTO, ONT.

Municipal and Civic Publications

MASON, WILLIAM P., Professor of Chemistry, Rensselaer Polytechnic Institute.

Examination of Water: Chemical and Bacteriological. Fifth Edition. Revised. 1917. vi + 186 pp. Illustrated. **$1.25**

This well-known book has been thoroly revised to bring it into strict compliance with the 1917 recommendations of the Committee on Standard Methods of Water Analysis of the American Public Health Association. Some of the less important analyses discussed in former editions have been omitted, and others recently accepted have been added. Among the important features of this volume are: the great emphasis placed on the sanitary survey as an integral part of the data for the interpretation of water analyses; the clarity of the directions for carrying out standard analyses; and the stress laid on the need for regular and systematic collection of water samples instead of relying on "chance" samples. While systematic collections are generally recognized as necessary, there are still sanitary engineers and water-works chemists who collect "chance" samples for the sake of economy, at the expense of reliable results.

CREAGER, WILLIAM PITCHER, Mem. Am. Soc. C. E.

Engineering for Masonry Dams. xi + 237 pp. 1917. **$2.50**

A conservative book covering all features of masonry dams from preliminary investigations, thru the choice of materials, to the treatment of details in construction and architectural possibilities. A good book for the municipal engineer or water-works official who wishes a recent publication, from a practicing engineer, for reference.

CUSHMAN, ROBERT EUGENE, Instructor in Political Science, University of Illinois.

Excess Condemnation. (National Municipal League Series.) 1917. xii + 323 pp. Tables, bibliography. **$2.00**

In this book Mr. Cushman treats of excess condemnation from the standpoint of the American city. Dealing with it from various angles—city planning, municipal finance, constitutional law—he presents a well-rounded and independent study of excess condemnation which, while it does not overlook the many closely related problems, affords a broad view of the purposes for which it may be used and the numerous questions connected with its theory and practice.

MAWSON, THOMAS H., Lecturer on Landscape Design, Liverpool University.

Bolton As It Is and As It Might Be. (Six Lectures Delivered Under the Auspices of the Bolton Housing and Town Planning Society.) 1916. Quarto. 123 pp. Photographs, maps, plans. **$5.70**

This volume presents Dr. Mawson's recommendations to the citizens of Bolton, England. The three specific needs for the city are pointed out, as follows: (i) the improvement of the streets around the market and the creation of a real addition to the shopping center; (ii) the laying out of Deane Clough as a public park and recreation ground, which shall not only be beautiful and useful in itself, but which shall some day become a part of an enlarged plan and the realization of a wider outlook by being incorporated in a proper park system for Bolton; (iii) and, finally, the improvement of the area surrounding the fine Town Hall, which should have its beginning in the formation of the "Deansgate Garden," so strongly recommended in Dr. Mawson's lectures. The book is illustrated with numerous photographs of existing conditions and with plans and drawings illustrating proposed changes. The lecture titles are as follows: What Do We Mean by Town Planning? The Scope and Influence of Town Planning; Does Town Planning Pay?; Bolton and Scientific Traffic Control; Parks Systems; Bolton and the Housing Problem. From this list it will be seen that the lectures are of sufficient breadth of scope to be of interest to the general reader as well as to the student of specific city-planning problems.

FOOTE, CHARLES E.

Practical Road Building. Endorsed by the National Highways Association and the American Automobile Association. 1917. 304 pp. Illustrated. **$1.35**

This is a straightforward, well-written and untechnical presentation of the problems incident to the development of roads and highways. It is divided into two parts, the first of which opens with an outline of the history of roads. The rest of the chapters in this section deal with road location, grades, drainage, foundations, surfaces, bridges and culverts, traffic, and finance. Part II discusses the different types of roads: earth, gravel, sand-clay, top soil, macadam, brick, concrete, bituminous, sand-asphalt, and special-surface roads. In his foreword to this book President Charles Henry Davis, of the National Highway Association, writes: "There are many thousands of road officials in our small towns, villages, townships, and counties who will find this book easy of reading and understanding and valuable in its shortness, simplicity and directness of statement and purpose. It appeals more directly to the practical lay mind, and yet has great value to the average engineer as well."

MILLER, JOSEPH DANA, Editor.

Single Tax Year Book (Quinquennial). The History, Principles and Application of the Single Tax Philosophy. 1917. 478 pp. Statistics. **$2.65**

This book is a veritable one-volume encyclopedia of the single-tax movement. It tells of Henry George—his life and his campaigns—of the inception and development of the single-tax movement in the United States and in other countries, the present status of the movement, and the applications of the idea in recent years.

FARRAR, GILBERT P.

The Typography of Advertisements that Pay. How to Choose and Combine Type Faces, Engravings and all the Other Mechanical Elements of Modern Advertisement Construction. 1917. 300 pp. Illustrated. **$2.25**

With the increasing demand for information and publicity in regard to civic and municipal affairs, it is becoming imperative that city officials, chambers of commerce and civic workers generally acquaint themselves with the technique of modern publicity and advertising methods. This book aims to fulfill this need by furnishing expert information on how to choose and combine type faces, engraving and all other mechanical elements of modern advertising construction.

WOLLASTON, MARY A., Compiler; C. WARD CRAMPTON, M. D., Editor.

The Song Play Book. Singing Games for Children. 1917. 69 pp. Words and music. **$1.70**

This book includes fifty song-plays chosen from a great number because of their adaptability to classroom and playground conditions, and because they also afford a large amount of vigorous exercise in proportion to the small amount of singing demanded. The plays, used and tested for several years in the New York Training School for Teachers, have been revised to meet school needs. These changes include the introduction of "choruses," slight changes in the music, etc., the object being to make the song-plays singable and practical.

—yes, some twenty years ago

Twenty years ago, we made a big lot of Enameled Iron Street Signs for the City of Baltimore, but we haven't sold the City many since—only because

THE TOWN HASN'T NEEDED THEM

The signs we sold them twenty years ago are still doing business—that's the economy of "BALTO" Guaranteed Porcelain Enameled Iron Municipal Signs.

That's the proof that there is no "just-as-good."

If you can afford to experiment with low prices (?) you're fortunate, but the taxpayer pays the freight. Our product is the one absolutely dependable out-of-door municipal sign on the market, and we can prove it if given half a chance.

GIVE US THE CHANCE TODAY

Quotations and a sample of our finished product upon request—this involves no obligation on your part whatever.

May we send it to-day?

Write Dept. C.

THE BALTIMORE ENAMEL & NOVELTY CO.

Baltimore, Maryland, U. S. A.

Pamphlets and Papers of Civic Interest

See also the department of News and Ideas for Commercial and Civic Organizations

The City Manager Plan for New York City

A Plan of Organization for New York City. A Mayor as Chief Public Representative and Framer of Policies; Relieved of Detailed Administrative Responsibility; A Board of Directors, and, as a Corollary of These Changes, a City Manager. Suggestions for Charter Changes, by Henry Bruere, former Chamberlain, City of New York, May, 1917. 44 pp. Plans, statistics. (Apply to Municipal Reference Library, Municipal Building, New York City.)

St. Louis' City Planning Problem

Problems of St. Louis: Being a description, from the city planning standpoint, of past and present tendencies of growth, with general suggestions for impending issues and necessary future improvements. Issued by the City Plan Commission, Harland Bartholomew, Engineer. 1917. 164 pp. Photographs, maps, plans, charts. (Apply to Andrew Linn Bostwick, Secretary, City Plan Commission, St. Louis, Mo.)

A Comprehensive Municipal Report

Annual Report of the City of Plainfield, New Jersey, 1916, containing the Mayor's Message, Treasurer's Report, Streets and Sewers Committees' Reports, Police and Fire Departments' Reports, Report of Building Inspector, Health Department Report, Report of Overseer of Poor, Shade Tree Commission Report, and Public Library Report. 1916. 87 pp. (Apply to John J. Carroll, City Clerk.)

The Social Survey

This is the title of an interesting pamphlet by Bessie A. McClenahan, issued as Bulletin No. 26, December 1, 1916, in the Extension Bulletin of the University of Iowa. 24 pp. (Apply to the University, Iowa City, Iowa.)

An Interesting Study of Municipal Golf

Municipal Golf is the title of Bulletin No. 13 of the American Association of Park Superintendents, which has been prepared by J. W. Duncan and B. A. Clark. A valuable feature of this study is the charts giving statistics in regard to municipal golf courses, and in regard to park acreage, annual appropriation, water supply, etc. 1917. 13 pp. Illustrated. (Apply to Roland W. Cotterill, Secretary of the Association, Seattle, Wash.) 25 cents.

Municipal Progress in Detroit

A Year of Municipal Progress. Fifteen-page inventory of work accomplished from July 1, 1916, to June 30, 1917. (Apply to Detroit Bureau of Governmental Research, 100 Griswold Street, Detroit, Mich.)

Two Interesting Street Lighting Articles

Street Lighting for Small Cities and Towns. By James R. Cravath. (The first of a series of articles, in which general principles are discussed, including brightness, silhouette effect, shadows, glint, glare, spacing and shade-tree interference.) Illustrated. pp. 414-417, the *Electrical World*, September 1, 1917. (Apply to McGraw-Hill Publishing Company, Inc., New York City.) 10 cents.

Street-Lighting Units in the Smaller Cities. By James R. Cravath. (A discussion of the characteristics of gas-filled incandescent lamps and magnetite-arc lamps, and of available accessories, together with some operating cost data.) Illustrated. pp. 473-477, the *Electrical World*, September 8, 1917. (Apply to McGraw-Hill Publishing Company, Inc., New York City.) 10 cents.

An Important Study of Zoning

Zoning: The division of cities into residence and industrial districts; a discussion of laws and ordinances. Compiled by Earl H. Davis, Municipal Reference Librarian, St. Louis Public Library. (Published as Municipal Reference Number of St. Louis Public Library Monthly Bulletin, July, 1917.) 39 pp. (Apply to author, as above, 206 City Hall, St. Louis, Mo.)

For the Home and for the Factory

Leaflet-bulletin issued by the National Fire Protection Association and pointing out that it is the duty of every citizen in war time to act as a fire warden of the nation. (Apply to Franklin H. Wentworth, Secretary of the Association, 87 Milk Street, Boston, Mass. $1.00 per hundred; $7.50 per thousand.)

Methods, Materials and Appliances

News from Engineers, Manufacturers and Supply Houses

Disintegration of Concrete Floors Checked

One of the problems encountered by superintendents of public buildings which are equipped with concrete floors is that of checking the disintegration and crumbling of the concrete. In public schools this problem is of particular importance, because of the health menace of the concrete dust raised by the children scurrying thru the corridors. Concrete floors must constantly be swept and washed if their respectable appearance is to be maintained.

The interests of conservation of health, time and energy would seem to point to some means of checking this pulverizing process. Lapidolith, a colorless liquid chemical manufactured by L. Sonneborn Sons, 264 Pearl Street, New York City, offers an effective solution of the problem. This chemical, applied like a wash, penetrates and grips the rough surface of the concrete, thus providing a hard, lasting surface that requires less attention than the untreated floors, and insures added efficiency and sanitation. The manufacturers of this product have issued an interesting circular which answers questions regarding concrete floors, making use of photographs and testimonial letters from municipal officials and school superintendents, such as the following from F. A. Mott, Superintendent, Seymour Public School, Seymour, Ind.:

"Our high school building has cement floors in basement and in all corridors. The cement crumbled and was therefore dusty. We purchased last year a large barrel of 'Lapidolith' and applied according to

MOTT LAMP POSTS

STANDARDS OF MERIT

Special Designs of Lighting Standards For Type C Lamps

LAMP POSTS FOR ALL REQUIREMENTS

FOUNTAINS

Display and Drinking

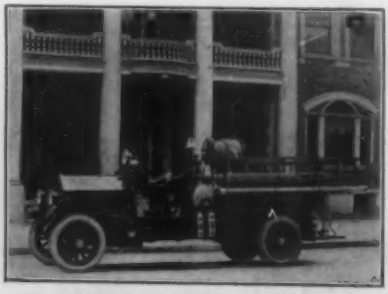
For PUBLIC SQUARES, PARKS, PLAYGROUNDS, Etc.

ENTRANCE GATES, RAILINGS, SETEES

CATALOGUES ON APPLICATION

THE J. L. MOTT IRON WORKS

Fifth Avenue and 17th Street, New York



—AND NOT ONLY IN LAPEER

but in every city where South Bend Double Duty Apparatus is installed. They perform that same efficient, conscientious service. They are dependable—and that's what counts in Fire Apparatus. Write us for booklets.

City of Lapeer

LAPEER, MICHIGAN, April 6'17

South Bend Motor Car Works
South Bend, Ind.

Attention Messrs. Mecklenburg & Scott.
Gentlemen:

I am writing this letter to let you know that you were about 24 hours early with your Munsey Committee, as last night Lapeer experienced the most disastrous fire ever known in her history.

An alarm was turned in at 6.30P.M. and we put the pumper to work immediately, drawing from the river. She did continuous service for about 5 hours and saved the city of Lapeer at least two valuable stores, amounting to a good many times the price of the entire equipment.

This morning our most radical knockers against the purchase of the machine frankly told me that the machine did not owe the city of Lapeer a cent.

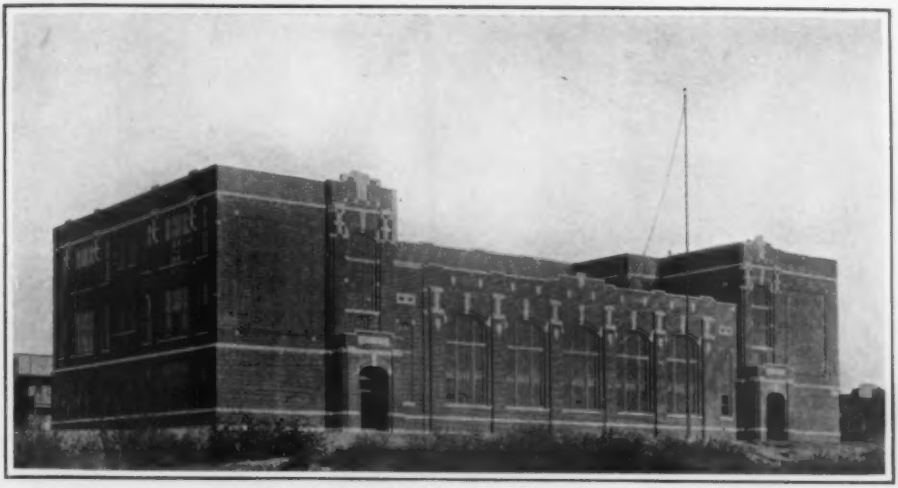
It certainly did admirable and efficient service for 5 hours continuous work.

Very truly yours,

R. F. Imray
Mayor.

RFI/KB

The South Bend Motor Car Works **South Bend, Ind.**



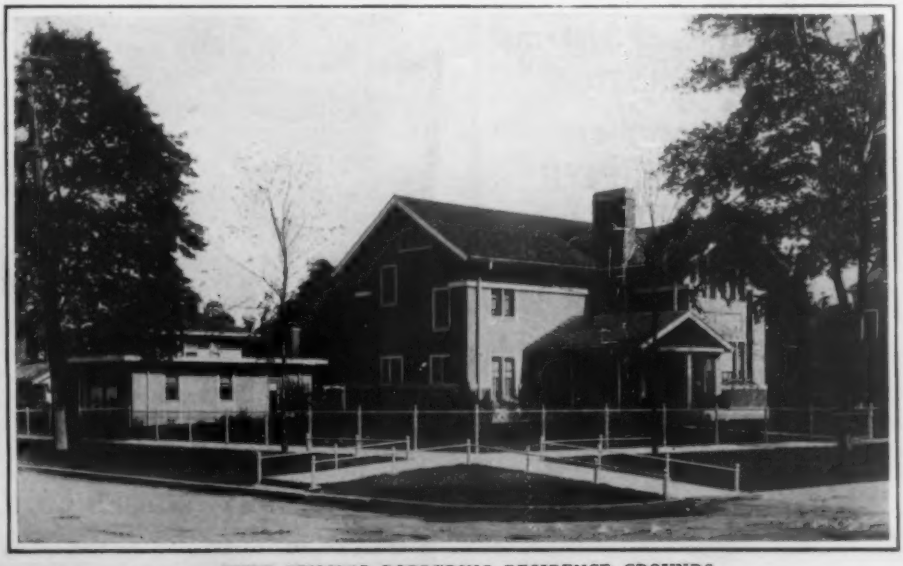
THE STEELE SCHOOL, HARRISBURG, PA.

directions. The floors were greatly improved, the surface being much harder than before and there being little or no dust from the cement."

This letter serves to show the attitude of those who have had experience with Lapidolith and have found it satisfactory. The illustration shows the Steele School, Harrisburg, Pa., which is one of many schools which have found the answer to their concrete floor problems in Lapidolith.

Ornamental Wire Fences

The view shown herewith is a good example of the possibilities of wire fencing to set off or supplement an architectural scheme. Incidentally, this particular photograph shows the home of J. P. Arthur, president of the Cyclone Fence Company, of Waukegon, Ill. The fence surrounding the grounds is naturally a product of this company. It fills a capacity here much the same as that of a picture frame, emphasizing proportion and lending quiet dignity to the property. The lower fences bordering the sidewalks serve the additional purpose of protecting the grass from pedestrian invasion. The corner posts of these miniature fences are of one piece with the sidewalk, being fashioned of cement. This insures a firm setting for the horizontal bars, as well as a lasting anchorage.



WIRE FENCING BORDERING RESIDENCE GROUNDS

CLOW CASTINGS

Special Sizes

for Water Mains
Filtration Plants
Gas Works and
Sewage Disposal Systems

AT SHORT NOTICE

Prompt Shipments of

CAST IRON PIPE
and FITTINGS

Let us quote on your requirements

JAMES B. CLOW & SONS

Established 1876

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Chicago, Coshocton and Newcomerstown, Ohio

A STREET CAN

convenient for hurried City people. The Hood cover hides the contents from passers-by—the open ends allow papers, etc., to be easily and quickly deposited.

This Can may be used with sacks hung inside. Is made in set up or knock down shape

For complete description, ask

THE STEEL BASKET COMPANY
708 So. Third St., Cedar Rapids, Iowa

FOUNTAINS

DISPLAY and DRINKING

LAMP STANDARDS

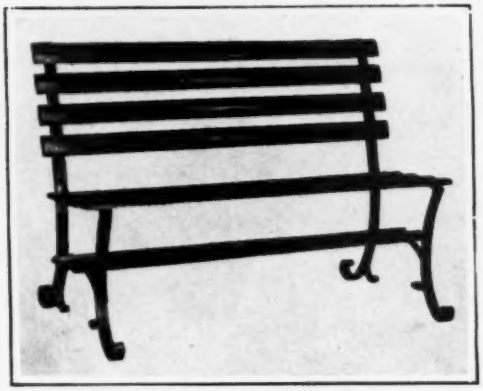
OVER ONE THOUSAND PATTERNS

THE CASEY HEDGES CO.
CHATTANOOGA, TENN.

Chicago Cincinnati

Seats Make Your Park Inviting

A park may be ever so green and cool and inviting, and yet not attract the number of people it should attract if it is not amply equipped with comfortable seats. Noll Brothers, of Bausman, Lancaster County, Pa., have done their best to make the settee illustrated especially inviting for tired couples to cool off or bask on, as the weather may be. There are no edges to stick into one, and the slats are



HAVE YOU ENOUGH SEATS IN YOUR PARKS?

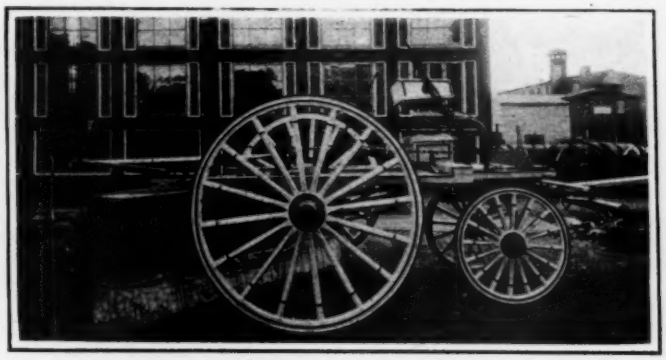
bolted on tight. In short, the seat is practical and substantial.

A number of other attractive designs are described and illustrated in a folder issued by the manufacturers of these benches. A letter to them will bring this and other information to park superintendents interested in making the parks and squares under their supervision attractive to the masses.

+ +

A Durable Street Sweeper

A street sweeper that is well built of durable materials, that is of light draft and therefore easy on horses and at the same time is comfortable and conveniently handled by the driver, is a combination hard to get. The Universal Road Machinery Company, of Kingston, N. Y., seems to have succeeded admirably in its "Reliance" sweeper. It is one of the lightest street sweepers made, and yet because of good design and construction is remarkably rugged. Among the special features that are claimed to have appealed strongly to purchasers are the following: the prevention of side sway of broom; speedy adjustment of broom pressure; steel gears and roller chain in the driving mechanism and the position of the broom, which does not project beyond the hub of the wheel, and hence is protected from damage when working close to curbs or posts along the roadway.



THE "RELIANCE" STREET SWEEPER

+ +

Connell With Day & Zimmerman

William H. Connell, formerly Chief of the Bureau of Highways and Street Cleaning of the City of Philadelphia, has become Engineering Executive of Day & Zimmerman, Inc., Engineers, 611 Chestnut Street, Philadelphia.

This company is now in a position to advise on engineering, administrative and financial problems connected with the construction and maintenance of roads and pavements, street cleaning and the removal and disposal of waste.

+ +

Illinois State Board of Natural Resources and Conservation Appointed

John W. Alvord, C. E., of the firm of Alvord & Burdick, consulting engineers, Chicago, has been appointed by Governor Lowden of Illinois as a member of the Illinois State Board of Natural Resources and Conservation, which has been created under the new Civil Administration Act, and is expected to study the resources of the state and the work of its departments under the lines indicated, and to advise the Governor and the Legislature from time to time on matters in which the welfare of the state may be promoted.

Prof. Thomas C. Chamberlain and Prof. John M. Coulter, both of the University of Chicago, will advise respectively on geology and biology, and Prof. William A. Noyes and Prof. William Trelease, both of the University of Illinois, will advise on chemistry and forestry, respectively. Mr. Alvord will advise on water resources. The members of the Board will serve without compensation.

+ +

Architects and Engineers Combine

A strong combination of architectural and engineering talent and experience is represented in the recently formed association of

THIS NEW FACTORY

This new factory is already turning out over 100,000 bricks daily.

The Schuylkill Valley Vitrified Products Co., has just been organized and is now ready to receive orders for paving brick, conduits and building brick for all municipal work.

BRICK

We own over 235 acres of first quality shale land. Thouands upon thousands of dollars have been and are being spent to perfect this plant and make it the most up-to-date in the country. We have the only brick kilns under structural iron buildings.

If you need brick for any purpose, please get in touch with us.

Write for further information today.

The Schuylkill Valley Vitrified Products Co.
Oaks, Montgomery County. Penna.

One of our Large Modern Kilns

Ready to receive brick for burning

the firm of Geo. B. Post & Sons, architects, and the organization headed by Ernest P. Goodrich, engineer, with headquarters in New York.

Ernest P. Goodrich is a consulting engineer of national reputation, and has served as consulting engineer to New York, Newark, Portland, Ore., and many other municipalities. He is the designer of the Bush Terminal in South Brooklyn, and is the Director of the Bureau of Municipal Research of New York.

A. Pearson Hoover, associate of Ernest P. Goodrich, is an authority on grade crossing elimination and industrial developments, and is engineer for the Paterson (N. J.) Industrial Development Company.

George B. Ford, of the firm of Geo. B. Post & Sons, has served as consultant on city planning to a score of cities in America. In all of this work he has coöperated with Mr. Goodrich, and together they have made city planning investigations or prepared plans for Jersey City, N. J.; Newark, N. J.; Omaha, Neb.; East Orange, N. J.; Mansfield, Ohio, and a number of other places.

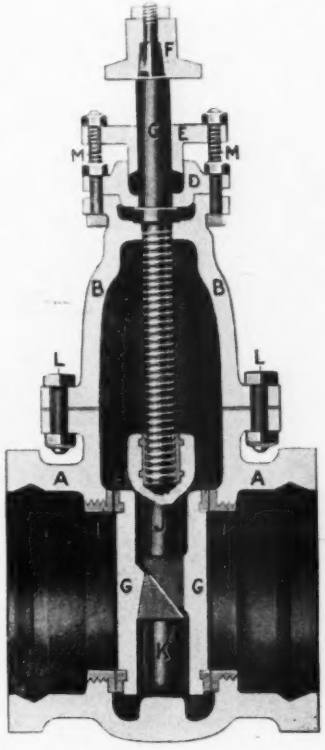
A Valve for Every Need

Whether it be a large sluice gate, a shear gate, a check valve, or large or small gate valves, the Ludlow Valve Manufacturing Company, of Troy, N. Y., can supply them in quantities and sizes to suit all needs. The double gate straightway valves are particularly illustrated in the first pages of the new catalog issued by that company.

The mechanism within the valve consists solely of the stem, two gates and two beveled-face wedges working independently of the gates and between them.

In closing the valves, the gates are lowered parallel to their seats until the lower edge strikes the stop at the bottom of the case, which stops the further advance of the lower wedge. The upper wedge and the gates continue down until the bevel face of the upper wedge comes in contact with the upper bevel face of the lower wedge. At this point the gates are down opposite the valve opening, and the upper wedge, moving over the lower wedge, forces both faces of the gate against their respective seats from a central bearing.

In opening, this process is reversed, but it must be remembered that the valves are released from their seats by the first turn of the valve stem before there is any upward movement. This is a particular feature of this make of valve. Another feature of importance is illustrated in the accompanying half-tone. It shows the bolted stuffing box which permits inspection and removal of gates without taking the valve out of the line. Ludlow valves are capable of standing pressure from either side with equally good results.



LUDLOW DOUBLE GATE VALVE

For Contractors and Boards of Public Works

Centrifugal Pumps for Municipal Service

Centrifugal pumps have reached a point of such dependability that they are adopted quite generally for municipal work in water and sewage pumping stations, as well as in drainage and irrigation projects. The Worthington Pump and Machinery Corporation has recently issued an instructive booklet on its Volute centrifugal pumps which is worth the attention of municipal officials.

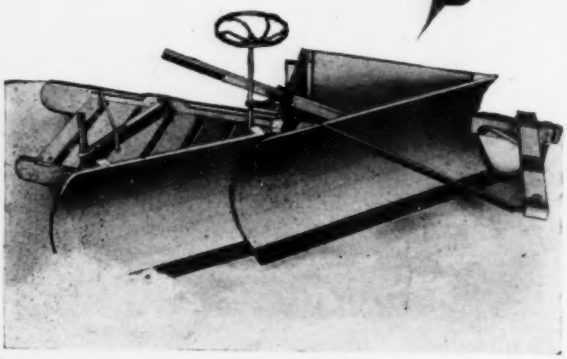
The Volute pump derives its name from the shape of the casing, which is similar to an involute curve. This type of pump is built in three standard designs, which readily provide a solution to the problem of securing a pump which will do the work required with the prime mover at hand. The range of designs includes the single-side-suction type, the double-suction solid-case type, and the double-suction pump

MOVING SNOW WILL BE A BIGGER PROBLEM THAN EVER THIS YEAR BECAUSE OF LABOR SHORTAGE UNLESS—

City Street Cleaning Departments equip themselves with up-to-date labor-saving appliances.

The Champion Snow Plow can be readily attached to any motor truck. When so attached it moves with and at the speed of traffic, and pushes the snow either to the right or left. Champion Snow Plows are used and endorsed by the cities of New York, Philadelphia, Chicago, Worcester, Mass., Akron, Ohio, and many others.

The Champion Snow Plow for Attaching to Motor Trucks



The Good Roads Snow Plow

A very popular and convenient plow for cleaning snow from sidewalks, drives, etc. Cleans a 5¾ foot path. Inexpensive and durable. Pulled with one horse.

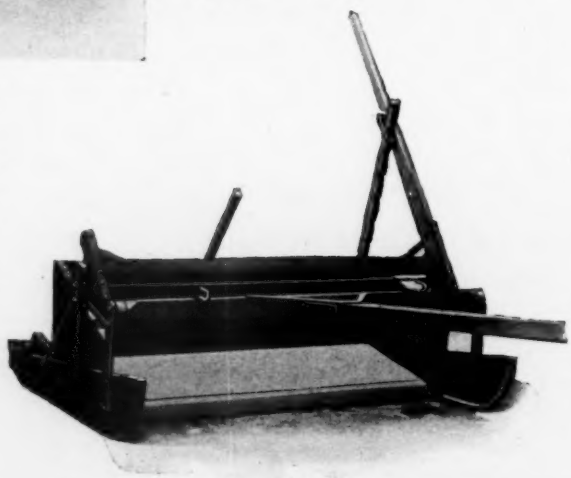
Economy Snow Remover

With this machine and two horses, one man will move as much snow as 50 men and a half dozen carts.

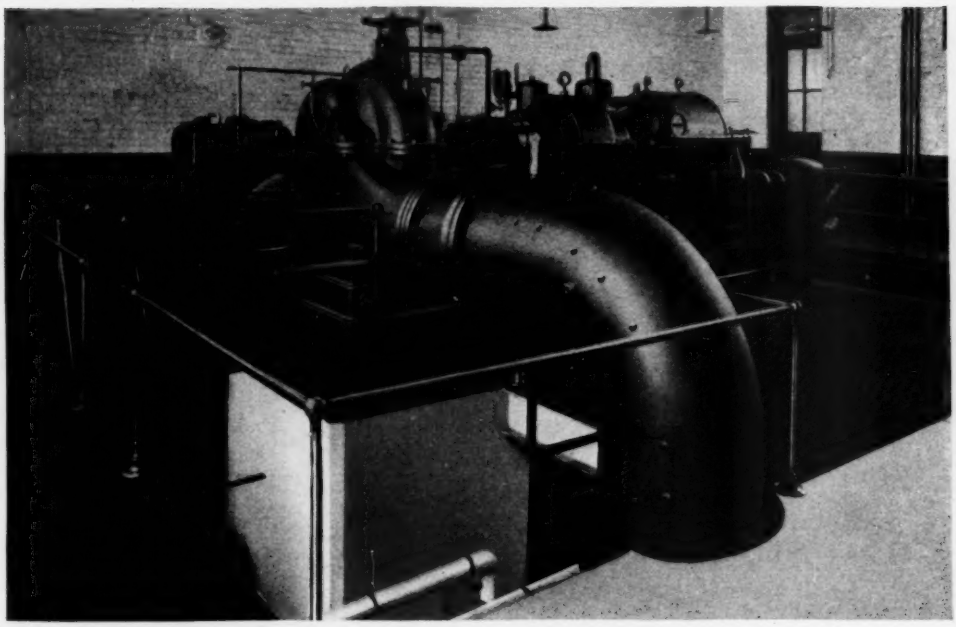
Inexpensive, durable and easily operated.

Don't wait until snow comes. Order machines now and be prepared:

Write today for Snow Handling Machinery Literature.



THE GOOD ROADS MACHINERY CO. **Kennett Square, Pa.**



VOLUTE CENTRIFUGAL PUMP FOR WATER AND SEWAGE PUMPING

with horizontally split casing. The single-suction pumps have a large diameter casing and therefore are preferable for low and moderate speed prime movers as well as for belt drive. The double-suction Volute pumps have casings of smaller diameter and are especially adapted for direct connection to high-speed motors and steam turbines.

The specific advantages of the various types of single- and double-suction pumps are chiefly in their adaptability to the conditions under which they are to operate. All bearings are specially protected against the inroads of grit and other foreign material which would ruin them. To cope with some extraordinary conditions, the manufacturers carry a line of vertical-shaft pumps which can be located in or near the water and driven by a motor placed above the surface.

+ +

Big Manufacturing Company Holds Sales Convention

Harrisons, Inc., Thirty-fifth and Grays Ferry Road, Philadelphia, recently held a convention of its officials and salesmen at the Bellevue-Stratford Hotel in Philadelphia. In addition to the usual convention program there were interesting trips thru the company's plants and "good times" in the evenings. An auto trip in and about Philadelphia and an excursion to Atlantic City were notable features of the convention, the object of which was to acquaint the salesmen with the latest information concerning the company's products, ideas and policies, and to strengthen the bonds of unity between salesmen and officials.

The Harrison Company is one of the largest paint and varnish manufacturing concerns in the country. A good general idea of the size of the company, of its products, and its ideals, is contained in the "Foreword" of its price list "GH," which quotes prices on a complete line of paints, colors, varnishes, white lead and chemicals.

John J. Haas, for many years with the Pennsylvania Salt Manufacturing Company, has joined the Chemical Sales Department of Harrisons, Inc.

+ +

New General Manager for Portland Cement Association

H. E. Hilts, formerly District Engineer at San Francisco for the Portland Cement Association, has been elected by the Board of Directors of that body to succeed the late J. P. Beck as General Manager.

Mr. Hilts obtained his technical and engineering education at the University of Pennsylvania. His first work was as rodman with the Mexican International Railroad. Later he was in the employ of the Philadelphia & Western Railroad. For two years he was instructor in the Engineering Department of the University of Pennsylvania, after which he entered the service of the New York Central Railroad, leaving that company to become associated with the Portland Cement Association as Road Engineer in 1913, for territory comprising the New England and northeastern states, having been stationed at Albany and Easton, Pa. In 1915 he was appointed District Engineer at San Francisco.

Mr. Hilts is an associate member of the American Society of Civil Engineers, member of the American Society for Testing Materials, associate member of the American Railway Engineering Association and member of the American Concrete Institute.

SANITATION

While our "CANCO" garbage can in point of appearance and strength of construction is without a peer, yet our equipment—the most comprehensive in the country—is such that we can make any desired sort of garbage container.

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With Offices in All Large Cities